HITACHI SERVICE MANUAL

TK

No. 2187E

VK-C1500E

Technical Data

HITACHI
EXT MIC
REMOTE
WHITE BAL
MAN
AUTO
REVIEW
IRIS
CLOSE
OPEN
PWR SAVE
NORMAL
MOS
COLOR VIDEO CAMERA
HITACHI VK-C1500E
H6X12.5RM
LENS
MACRO

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers! Critical parts are marked with ⚠ in the schematic diagram, and parts list.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

COLOR VIDEO CAMERA

October 1984

TOKAI WORKS

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SPECIFICATIONS

Pick up device:	NPN 3-layer construction MOS IMAGE SENSOR
Colour system:	PAL
Horizontal resolution:	300 lines or more
Synchronization system:	Internal synchronization (2:1 interlace)
External mic input:	−67 dBs, high impedance
Audio output:	−20 dBs (78mV rms), low impedance
Video output:	1 Vp-p 75 Ω (unbalanced)
Video S/N ratio:	46 dB or more
Automatic sensitivity control range:	35 ~ 100,000 lux
Minimum luminance required:	35 lux
Recommended luminance of object:	2,000 lux
Color temperature control:	From tungsten bulb illumination to cloudy weather
Viewfinder:	Electronic viewfinder (1″ B/W CRT)
Lens:	F = 1.2, f = 12.5 ~ 75 mm, power zoom (x 6) (Auto iris/manual iris, power zoom with MACRO mechanism)
Lens mount:	Fixed
Dia. of filter screw:	52 mm, thread pitch 0.75 mm
Microphone:	Non-directivity electret condenser microphone
Power voltage:	DC 12V
Power consumption:	4W (during recording) 0.3W (during stand-by)
External dimensions:	124(W) x 134(H) x 195(D) mm
Weight:	980g
Camera terminal:	Circular type 10P connector, screw-locking type
Accessory:	Camera cable x 1

* The specifications and external appearance of this unit may be changed without notice for improvement.

KEY TO ILLUSTRATIONS

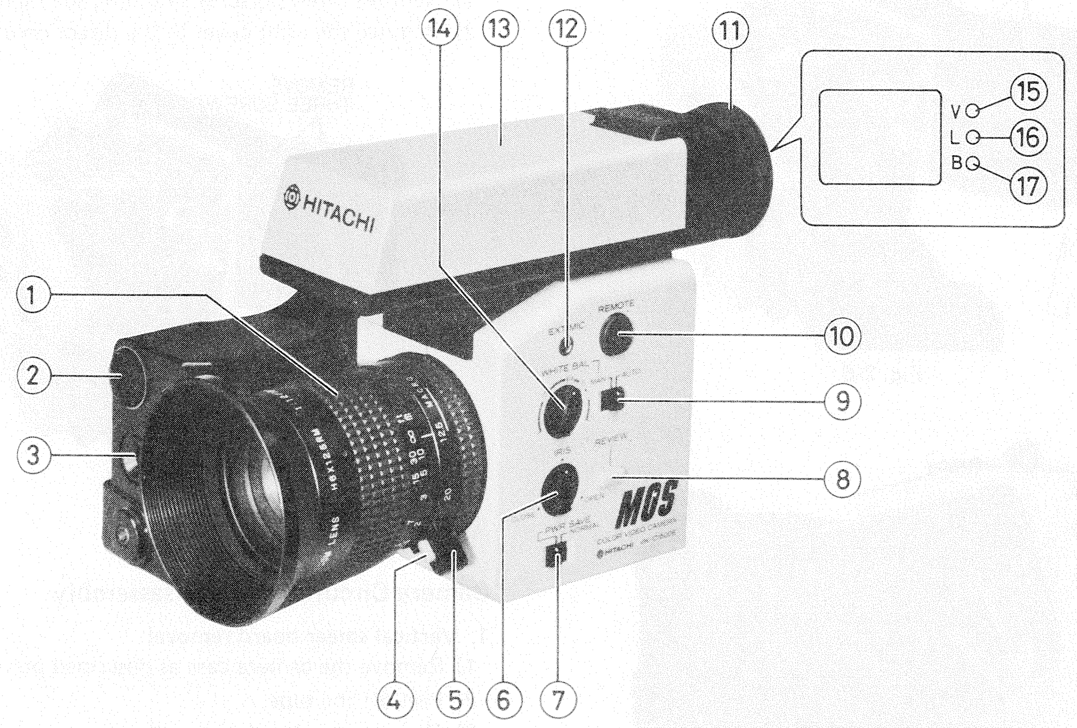


Fig. 1-1

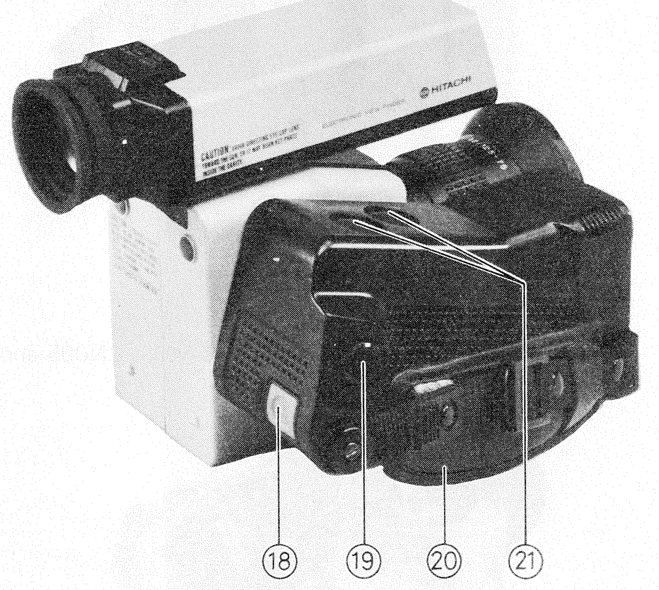


Fig. 1-2

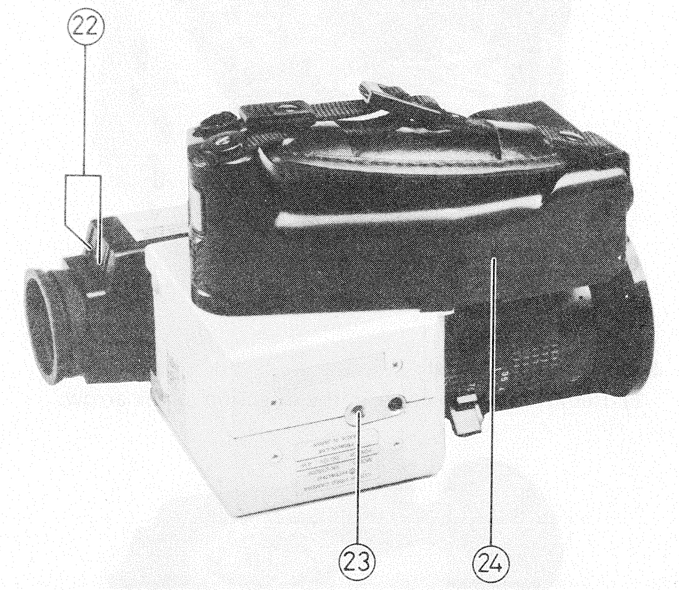


Fig. 1-3

❶ Focus adjust ring
Move this ring for focusing.

❷ Microphone
This is a non-directivity electret condenser microphone.

❸ White balance detection window
For detection of the white balance signal. To avoid misoperation of the auto white balance, do not block this window with your hand or other objects.

❹ Macro button
Turn the zoom lever while pressing this button for contact (MACRO) photography.

❺ Zoom lever
Move this lever for manual zooming.

❻ Iris control
Increase the light incident to lens in the back light by turning this knob.

❼ Stand-by switch
Set this switch to "STAND BY" when the pause mode continues for more than several minutes. Power consumption is greatly reduced.

❽ Instant review switch
Whether recording is taking place or not can be checked quickly by pressing this switch.

❾ White balance switch
When this switch is in the AUTO position, the colour balance is set automatically. Place the switch in the MANUAL position to adjust the colour balance while viewing the colour monitor.

❿ Remote control connector
Connection for optional Remote control unit.

⓫ Eye cup
Can be opened or closed.

⓬ External microphone jack
This is the external microphone connection terminal. When the external microphone is connected, the built-in microphone does not work. The jack of this unit is used for the mini-plug. Connect the mini-plug type high impedance (10kΩ) microphone to this jack.

⓭ Electronic viewfinder
The picture can be monitored by a 1" cathode ray tube. It is convenient for focusing and picture angle determination. The picture played on the VTR can also be seen.

⓮ White balance control
Use this control to adjust the white balance manually. Set the white balance switch to MANUAL and while viewing the colour monitor, rotate this control for the most natural colour.

⓯ Record indicator (V)
It is used to signal the camera operator that a recording is actually being made. When the indicator is on, the video cassette recorder is recording. When the indicator is off, a recording is not taking place. The indicator flashes during VTR fast forward, rewind and stop.

⓰ Low light indicator (L)
When the low light indicator is flashing, the light level may be inadequate. Additional illumination may be required. This indicator always lights during playback.

⓱ Battery warning indicator (B)
The battery warning indicator flashes when the battery level in the portable VTR becomes low. Replace or recharge the battery.

⓲ Start/stop switch
Starting and stopping VTR recording is possible by pressing this switch. When this switch is pressed with the VTR placed in the record pause mode, the tape starts running to start recording.
When this switch is pressed again, the tape stops and the VTR enters the record/pause mode.

⓳ Camera cable connector
Attach one end of camera cable here and other end of cable to CAMERA INPUT connector on Portable VTR or optional power supply.

⓴ Grip band

㉑ Power zoom switch
This switch performs zooming electrically.
"W" side: Picture becomes wider gradually.
"T" side: Picture becomes telescopic.

㉒ Brightness/contrast controls
These controls are adjusted at the factory and should not require your attention. After becoming completely familiar with the camera's performance you may want to add more contrast or brightness to the electronic viewfinder by adjusting these controls with a small screw driver.

㉓ Tripod mounting hole
Use to mount the camera on a tripod.

㉔ Pause polarity switch
Change the position of this switch if the Recording indicator (V) in the EVF does not match the operating mode of the VTR.

DISASSEMBLY

Camera Case Disassembly

Turn power off

1. Electronic viewfinder (EVF) removal

1) Remove one (1) screw holding the EVF.
2) Remove the EVF in the direction of the arrow.
3) Disconnect CN701.

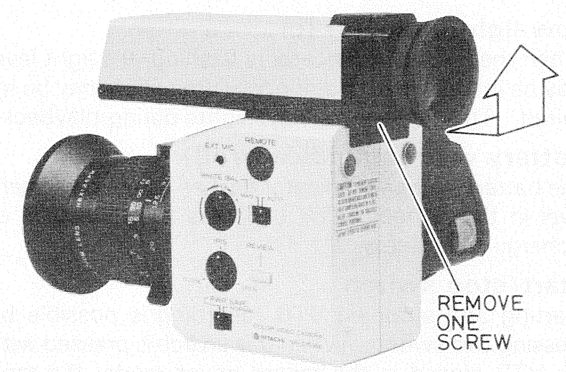

REMOVE
ONE
SCREW

Fig. 2-1

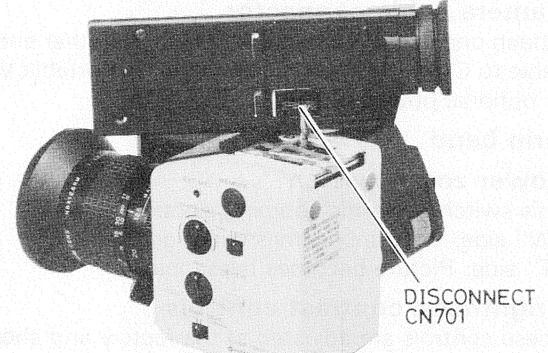

DISCONNECT
CN701

Fig. 2-2

2. Grip band removal

1) Remove two (2) screws holding the grip band.

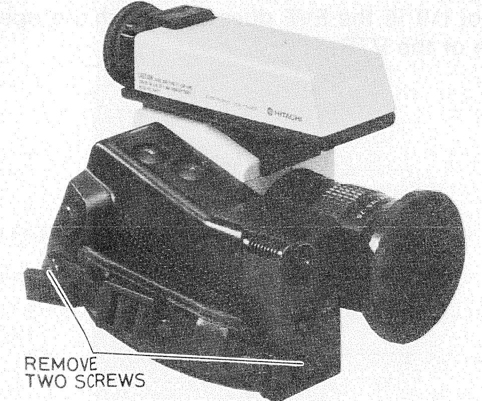

REMOVE
TWO SCREWS

Fig. 2-3

3. Left case removal

1) Remove three (3) screws holding the right case.
2) Remove the case in the direction of the arrow.
3) Remove the control board. (See Control Board Removal.)

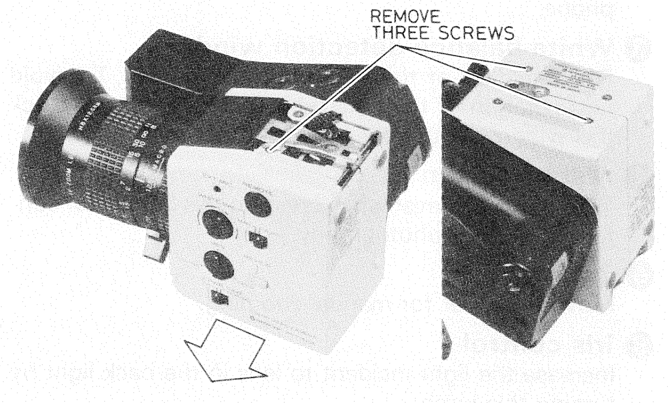

REMOVE
THREE SCREWS

Fig. 2-4

4. Right case removal

1) Remove two (2) screws holding the right case.
2) Remove the case in the direction of the arrow.
3) Remove three (3) screws holding the right cover. (See Fig. 2-6.)
4) Remove the cover in the direction of the arrow.
5) Remove two (2) screws holding the camera cable connector. (See Fig. 2-7.)
6) Unsolder the ground lead from the shield plate. (See Fig. 2-8.)
7) Pull out the board in the direction of the arrow.
8) Remove the zoom switch, VTR REC switch and microphone. (See each removal)

Zoom Switch Removal	P 8
VTR REC Switch Removal	P 8
Microphone Removal	P 10

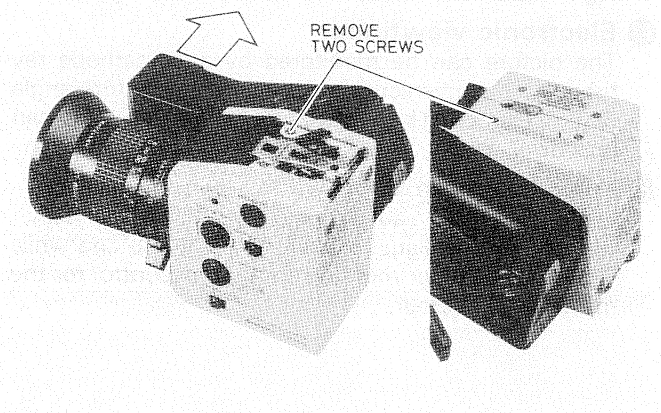

REMOVE
TWO SCREWS

Fig. 2-5

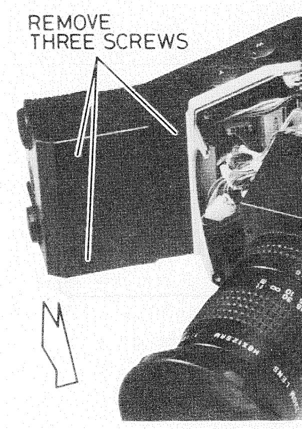

REMOVE
THREE SCREWS

Fig. 2-6

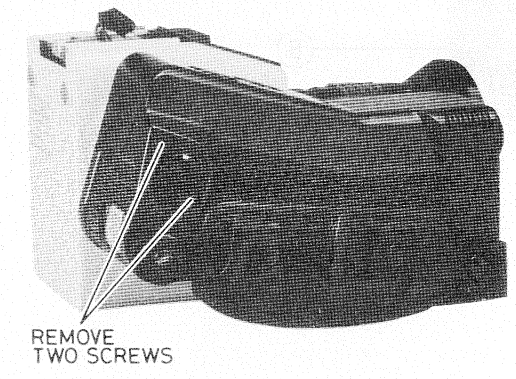

REMOVE
TWO SCREWS

Fig. 2-7

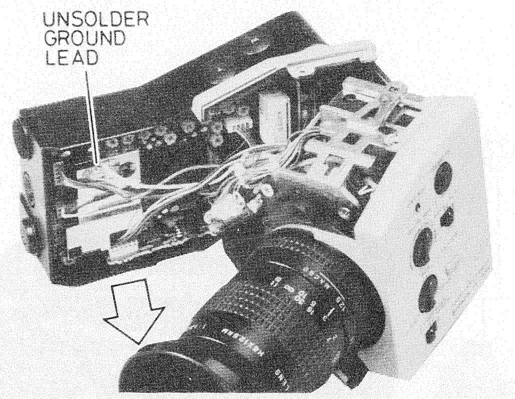

UNSOLDER
GROUND
LEAD

Fig. 2-8

5. Top cover removal

1) Remove the top cover in the direction of the arrow.

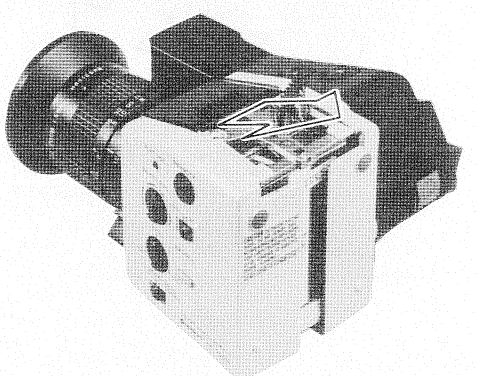


Fig. 2-9

6. Right cover removal

1) Remove three (3) screws holding the right cover.
2) Remove the right cover in the direction of the arrow.

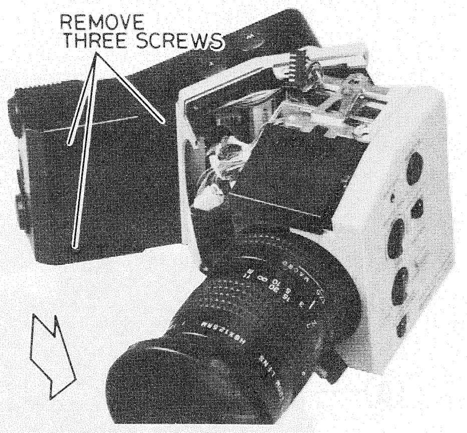

REMOVE
THREE SCREWS

Fig. 2-10

Camera Circuit Boards Disassembly

1. Vertical smear board removal

1) Remove the camera case as described previously.
2) Peel off the tape.
3) Remove the shield case in the direction of the arrow.

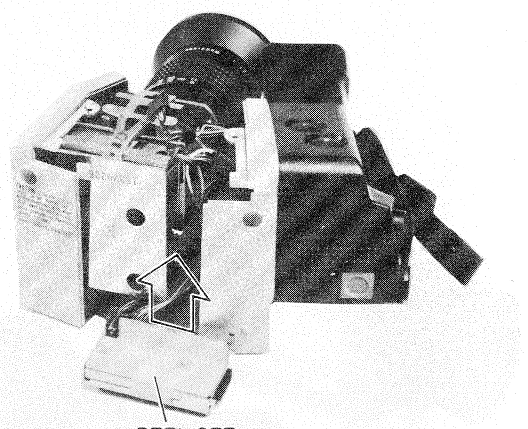

PEEL OFF
TAPE

Fig. 2-11

4) Disconnect three (3) connectors (CN003, CN005 and CN501).

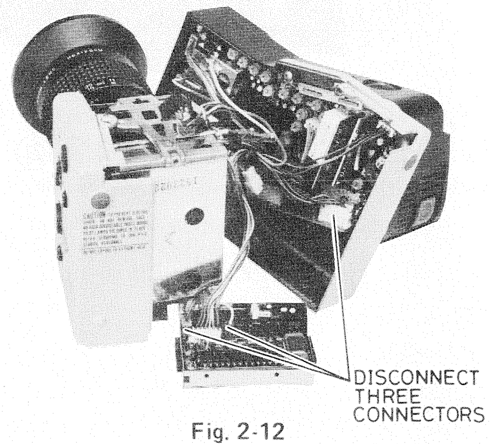

DISCONNECT
THREE
CONNECTORS

Fig. 2-12

2. Process board removal

1) Remove the camera case as described previously.
2) Pull out the board in the direction of the arrow.

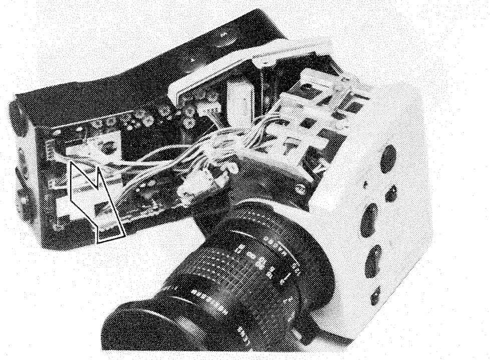


Fig. 2-13

3) Remove the process board in the direction of the arrow.
4) Unsolder the ground lead from the shield plate.
5) Disconnect five (5) connectors (CN001, CN002, CN004, CN111 and CN903).

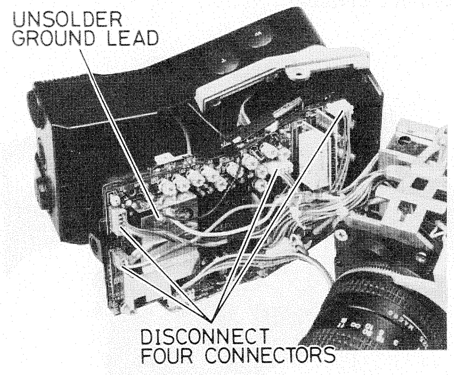

UNSOLDER
GROUND LEAD
DISCONNECT
FOUR CONNECTORS

Fig. 2-14

3. Interface board removal

1) Remove the camera case as described previously.
2) Pull out the board in the direction of the arrow. (See Fig. 2-14)
3) Remove the interface board in the direction of the arrow.
4) Disconnect six (6) connectors (CN305, CN901, CN902, CN904, CN905 and CN906).

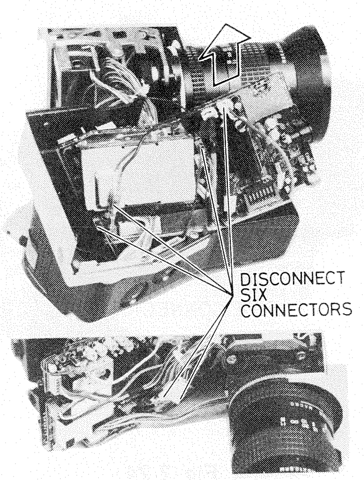

DISCONNECT
SIX
CONNECTORS

Fig. 2-15

4. Wiring I and wiring II board removal

1) Remove the camera case as described previously.
2) Pull out the board in the direction of the arrow. (See Fig. 2-14.)
3) Remove the wiring I and wiring II board in the direction of the arrow.
4) Unsolder the ribbon cable.
5) Disconnect three (3) connectors (CN501, CN601 and CN602).

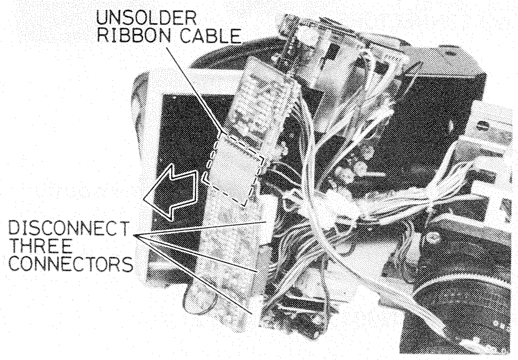

UNSOLDER
RIBBON CABLE
DISCONNECT
THREE
CONNECTORS

Fig. 2-16

6) Disconnect CN707.

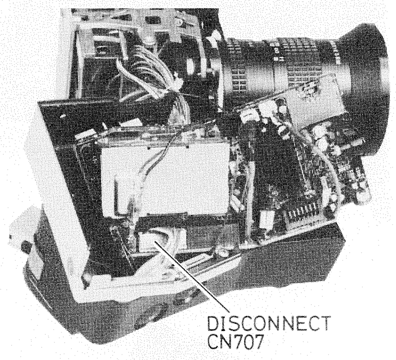

DISCONNECT
CN707

Fig. 2-17

5. Control board removal

1) Remove the camera case as described previously.
2) Remove two (2) screws holding the control board.
3) Release three (3) tabs.
4) Disconnect CN603.
5) Disconnect CN601 and CN602. (See Fig. 2-19.)

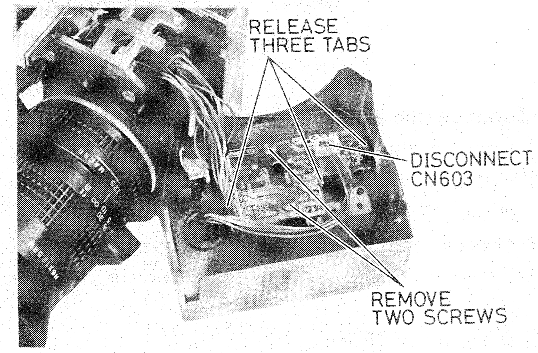

RELEASE
THREE TABS
DISCONNECT
CN603
REMOVE
TWO SCREWS

Fig. 2-18

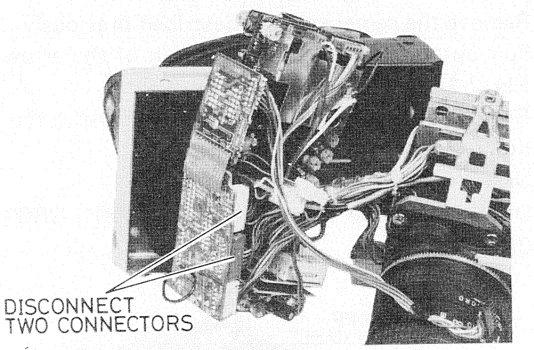

DISCONNECT
TWO CONNECTORS

Fig. 2-19

6. EXT. MIC jack board removal
   1) Remove the camera case as described previously.
   2) Release one (1) tab.
   3) Remove the EXT. MIC jack board in the direction of the arrow.
   4) Disconnect CN901. (See Fig. 2-21.)

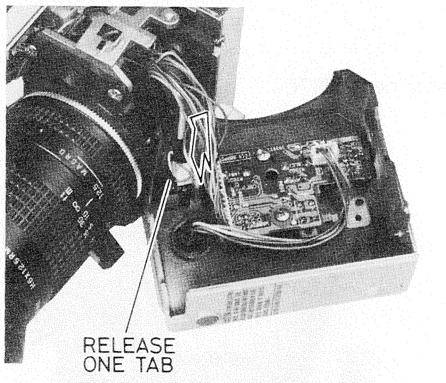

RELEASE
ONE TAB

Fig. 2-20

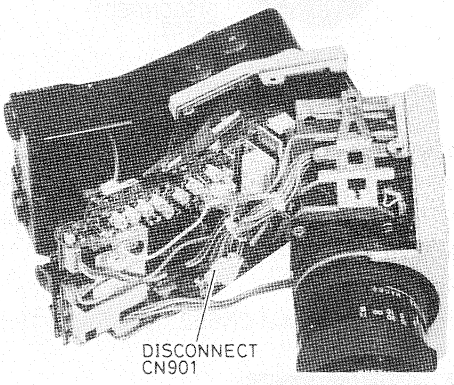

DISCONNECT
CN901

Fig. 2-21

7. Zoom switch assembly removal
   1) Remove the camera case as described previously.
   2) Pull out the process board in the direction of the arrow. (See Fig. 2-13.)
   3) Remove two (2) screws holding the board holder.
   4) Remove the zoom switch assembly in the direction of the arrow.
   5) Disconnect CN905.

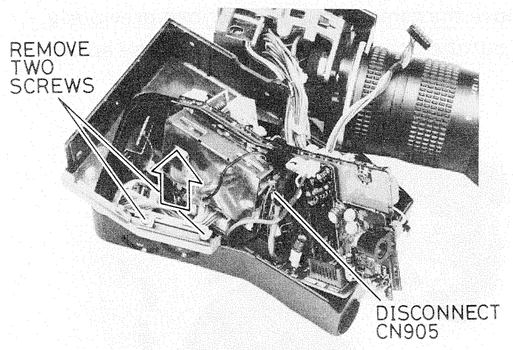

REMOVE
TWO
SCREWS
DISCONNECT
CN905

Fig. 2-22

8. VTR REC switch assembly removal
   1) Remove the camera case as described previously.
   2) Pull out the process board in the direction of the arrow. (See Fig. 2-13.)
   3) Pull out the plate holding the VTR REC switch in the direction of the arrow.
   4) Disconnect CN904.

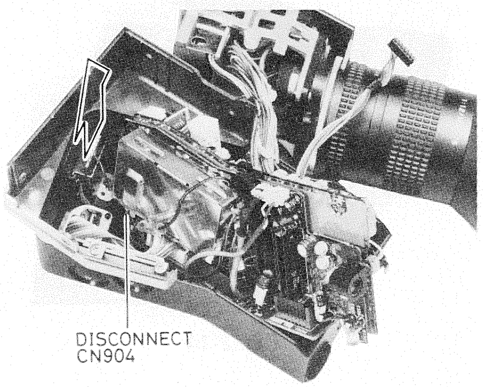

DISCONNECT
CN904

Fig. 2-23

9. Sensor board removal
   1) Remove the camera case as described previously.
   2) Disconnect fives connectors (CN001, CN002, CN004 CN003 and CN005).

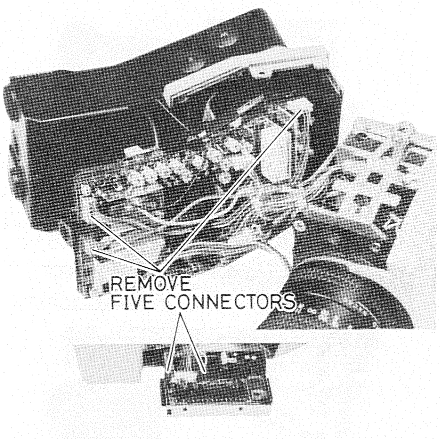

REMOVE
FIVE CONNECTORS

Fig. 2-24

3) Remove two (2) screws holding the shield cover.

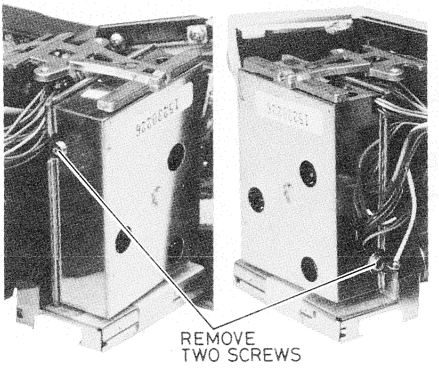

REMOVE
TWO SCREWS

Fig. 2-25

4) Remove three (3) screws holding the sensor board.
Note: Be sure to reinstall the sensor mounting spring when replacing the sensor.

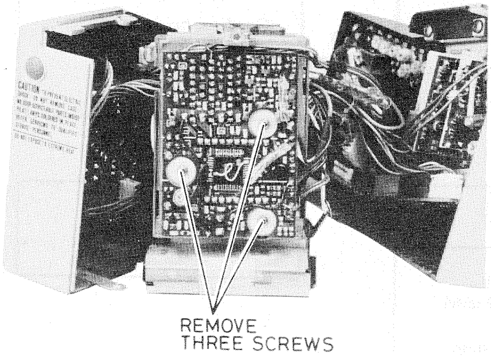

REMOVE
THREE SCREWS

Fig. 2-26

10. Lens block removal

1) Remove the camera case as described previously.
2) Remove the sensor board as described previously.
3) Remove two (2) screws holding the top frame.
4) Remove two (2) screws holding the bottom frame.

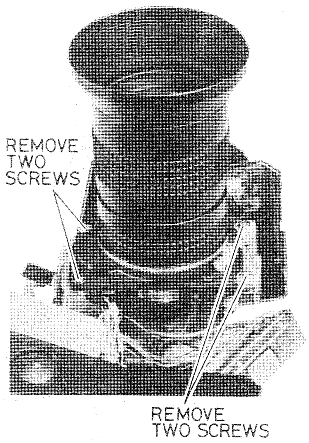

REMOVE
TWO
SCREWS
REMOVE
TWO SCREWS

Fig. 2-27

5) Remove three (3) screws holding the sensor frame.

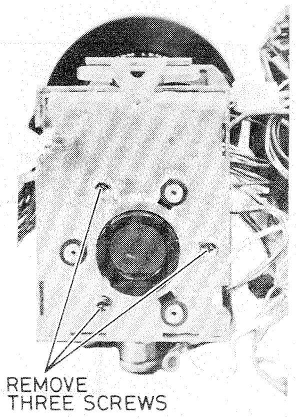

REMOVE
THREE SCREWS

Fig. 2-28

11. Iris block removal

1) Remove the camera case as described previously.
2) Remove three (3) screws holding the lens block.

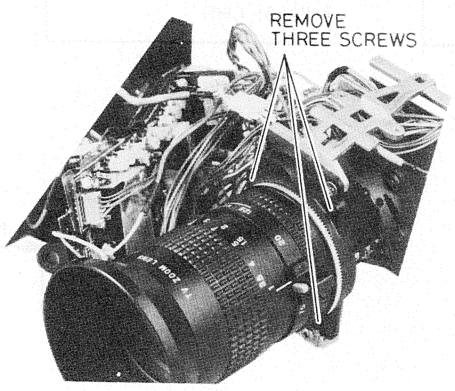

REMOVE
THREE SCREWS

Fig. 2-29

3) Remove three (3) screws holding the iris block.

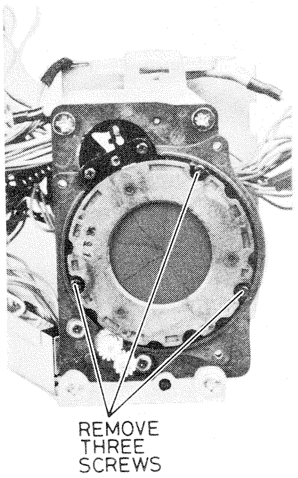

REMOVE
THREE
SCREWS

Fig. 2-30

12. Zoom motor removal

1) Remove the camera case as described previously.
2) Remove two (2) screws holding the zoom motor.

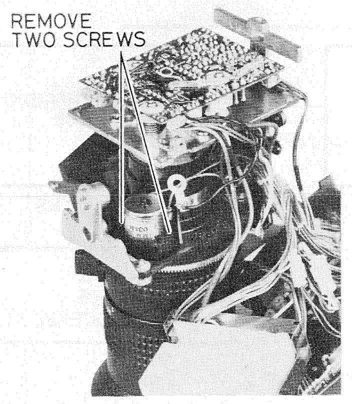

REMOVE
TWO SCREWS

Fig. 2-31

13. Microphone removal

1) Remove the right case as described previously.
2) Push the stopper in the direction of the arrow.
3) Disconnect CN906.

Note: Be sure not to push the stopper forcibly; the case may crack.

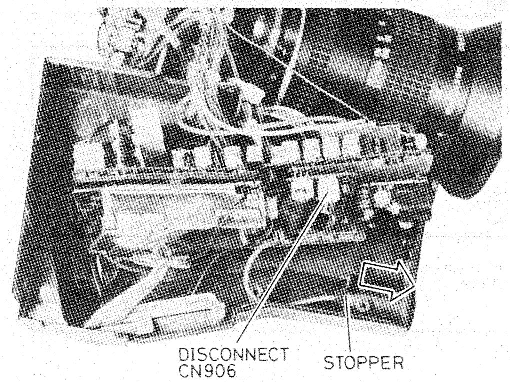

DISCONNECT
CN906
STOPPER

Fig. 2-32

14. Remote control connector removal

1) Remove the left case as described previously.
2) Release two (2) tabs.
3) Disconnect CN603. (See Fig. 2-33)

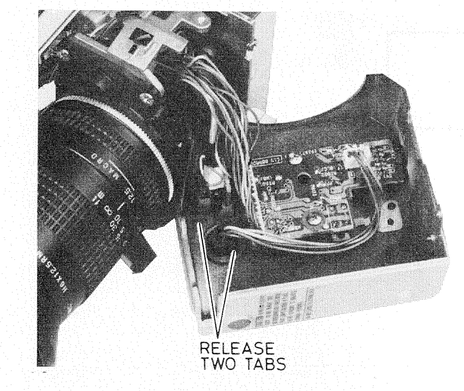

RELEASE
TWO TABS

Fig. 2-33

Electronic Viewfinder (EVF) Disassembly

1. Bottom case removal

1) Remove two (2) screws holding the bottom case.
2) Press the top cover to release the locking tab and gently pull a part as shown in Fig. 2-34.

Note: Remove the case carefully, because the tabs are delicate.

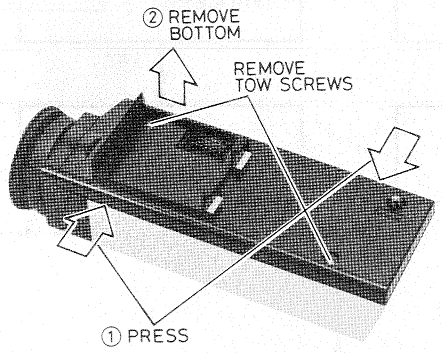

② REMOVE
BOTTOM
REMOVE
TOW SCREWS
① PRESS

Fig. 2-34

2. EVF board removal

1) Remove the bottom case as described previously.
2) Remove the board in the direction of the arrow.

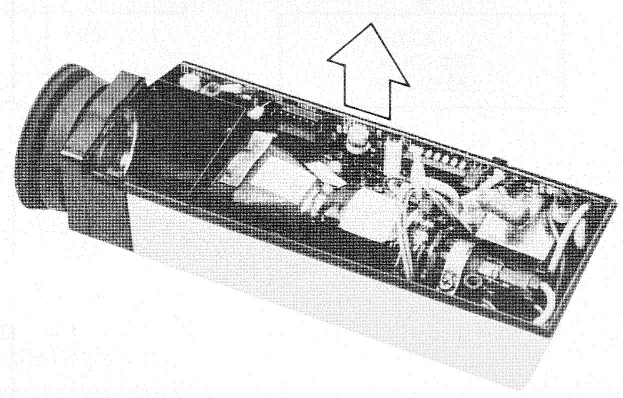


Fig. 2-35

3. CRT removal

1) Remove the bottom case as described previously.
2) Remove the CRT/Deflection coil in the direction of the arrow.

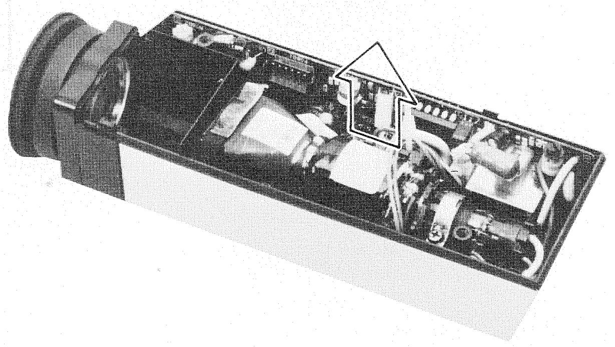


Fig. 2-36

3) Remove the anode cap.
4) Disconnect the CRT socket.
5) Remove one (1) screw holding the deflection coil.
6) Remove the CRT in the direction of the arrow.

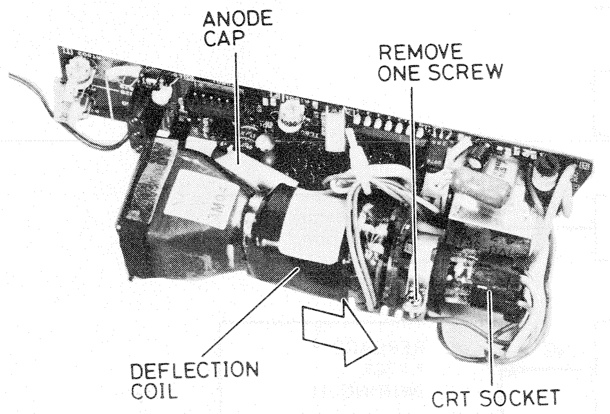

ANODE
CAP
REMOVE
ONE SCREW
DEFLECTION
COIL
CRT SOCKET

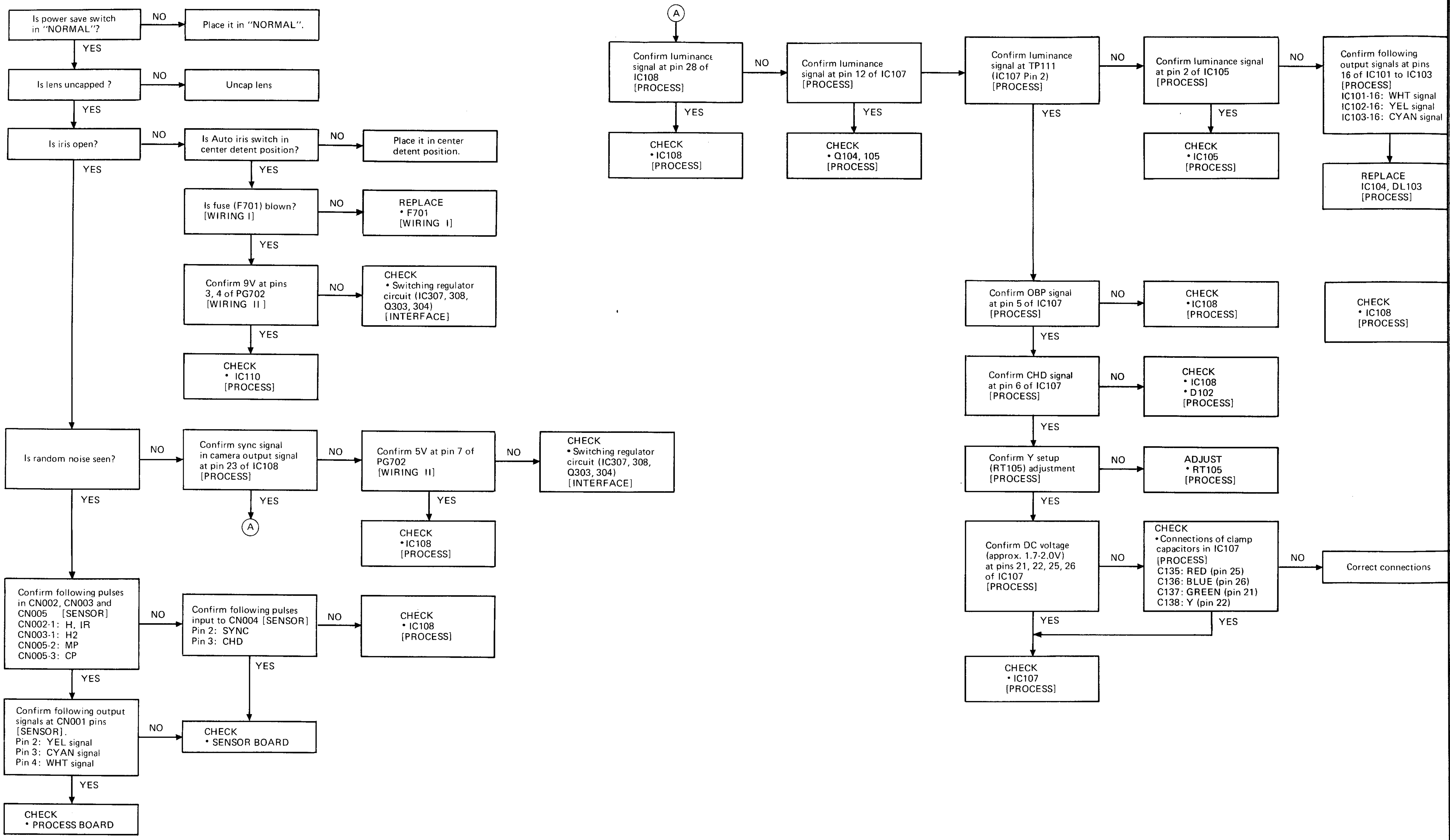
Fig. 2-37

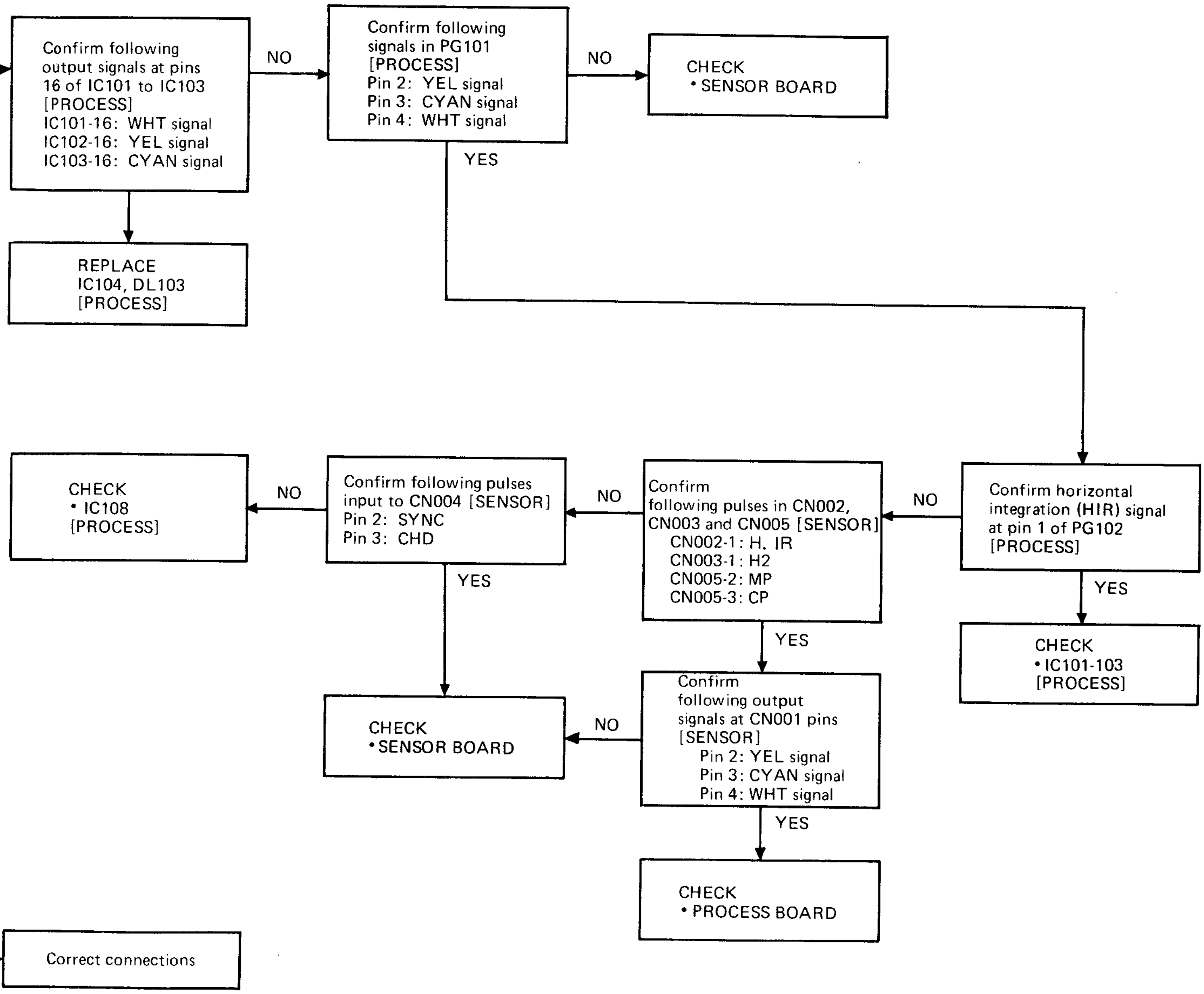
7) Follow disassembly procedure in reverse order to replace.

Note: Assemble the deflection coil moving it in the direction of the CRT screen.

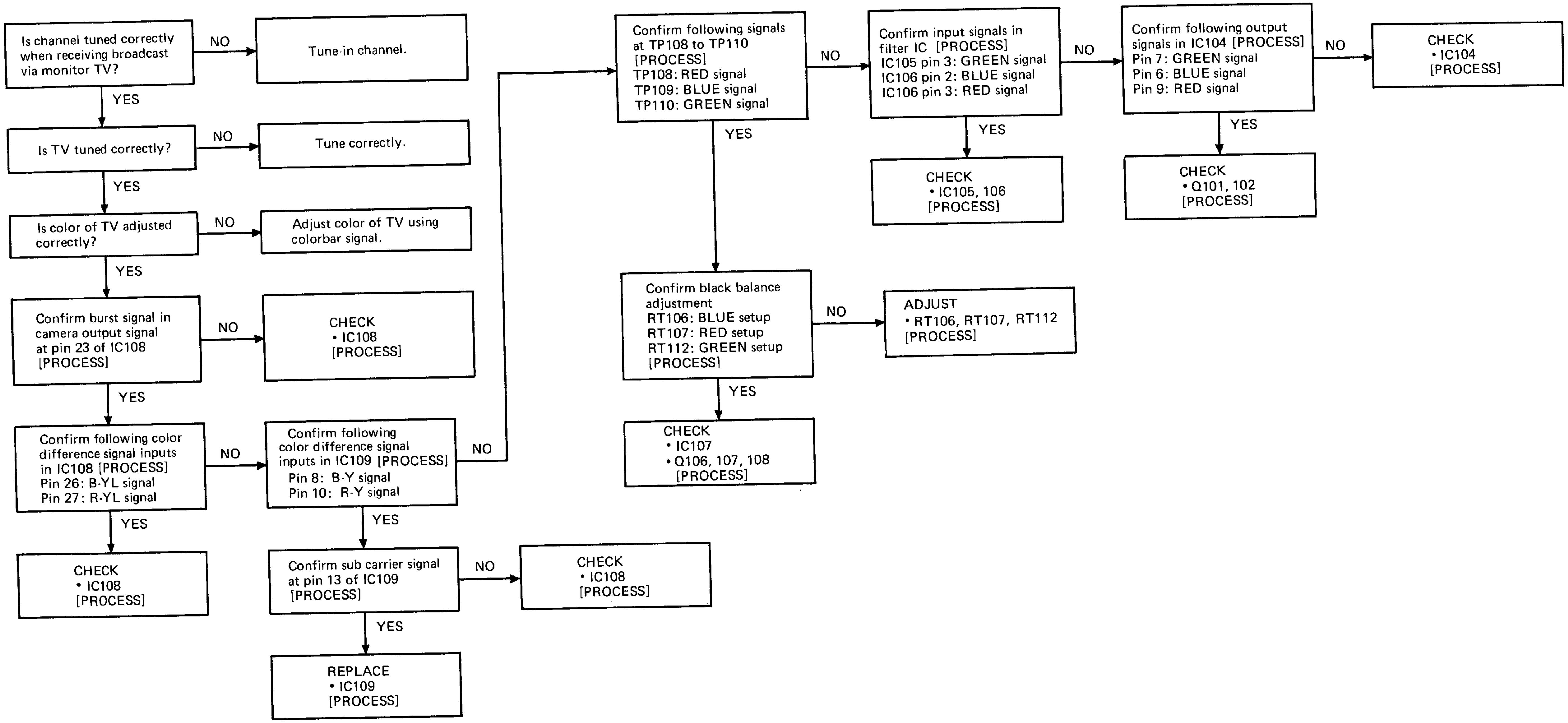
TROUBLESHOOTING

1. No picture

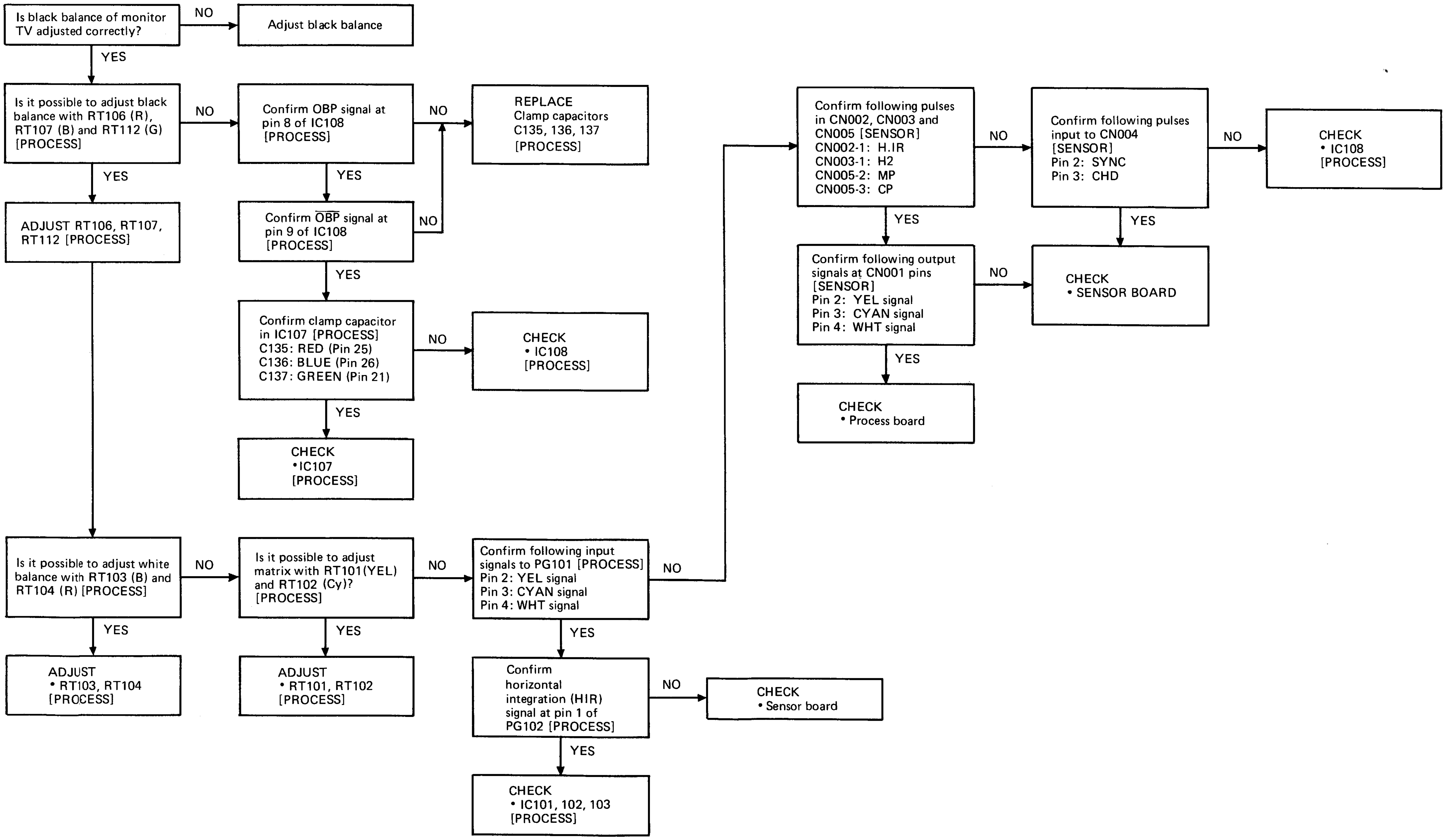

Is power save switch in "NORMAL"?
NO
Place it in "NORMAL".
YES
Is lens uncapped ?
NO
Uncap lens
YES
Is iris open?
NO
Is Auto iris switch in center detent position?
NO
Place it in center detent position.
YES
Is fuse (F701) blown? [WIRING I]
NO
REPLACE • F701 [WIRING I]
YES
Confirm 9V at pins 3, 4 of PG702 [WIRING II]
NO
CHECK • Switching regulator circuit (IC307, 308, Q303, 304) [INTERFACE]
YES
CHECK • IC110 [PROCESS]
YES
Is random noise seen?
NO
Confirm sync signal in camera output signal at pin 23 of IC108 [PROCESS]
NO
Confirm 5V at pin 7 of PG702 [WIRING II]
NO
CHECK • Switching regulator circuit (IC307, 308, Q303, 304) [INTERFACE]
YES
CHECK • IC108 [PROCESS]
YES
A
YES
Confirm following pulses in CN002, CN003 and CN005 [SENSOR] CN002-1: H, IR CN003-1: H2 CN005-2: MP CN005-3: CP
NO
Confirm following pulses input to CN004 [SENSOR] Pin 2: SYNC Pin 3: CHD
NO
CHECK • IC108 [PROCESS]
YES
YES
Confirm following output signals at CN001 pins [SENSOR]. Pin 2: YEL signal Pin 3: CYAN signal Pin 4: WHT signal
NO
CHECK • SENSOR BOARD
YES
CHECK • PROCESS BOARD
A
Confirm luminance signal at pin 28 of IC108 [PROCESS]
NO
YES
CHECK • IC108 [PROCESS]
Confirm luminance signal at pin 12 of IC107 [PROCESS]
YES
CHECK • Q104, 105 [PROCESS]
Confirm luminance signal at TP111 (IC107 Pin 2) [PROCESS]
NO
Confirm luminance signal at pin 2 of IC105 [PROCESS]
NO
Confirm following output signals at pins 16 of IC101 to IC103 [PROCESS] IC101-16: WHT signal IC102-16: YEL signal IC103-16: CYAN signal
YES
CHECK • IC105 [PROCESS]
REPLACE IC104, DL103 [PROCESS]
YES
CHECK • IC108 [PROCESS]
Confirm OBP signal at pin 5 of IC107 [PROCESS]
NO
CHECK • IC108 [PROCESS]
YES
Confirm CHD signal at pin 6 of IC107 [PROCESS]
NO
CHECK • IC108 • D102 [PROCESS]
YES
Confirm Y setup (RT105) adjustment [PROCESS]
NO
ADJUST • RT105 [PROCESS]
YES
Confirm DC voltage (approx. 1.7-2.0V) at pins 21, 22, 25, 26 of IC107 [PROCESS]
NO
CHECK • Connections of clamp capacitors in IC107 [PROCESS] C135: RED (pin 25) C136: BLUE (pin 26) C137: GREEN (pin 21) C138: Y (pin 22)
NO
Correct connections
YES
YES
CHECK • IC107 [PROCESS]


Confirm following output signals at pins 16 of IC101 to IC103 [PROCESS] IC101-16: WHT signal IC102-16: YEL signal IC103-16: CYAN signal
NO
Confirm following signals in PG101 [PROCESS] Pin 2: YEL signal Pin 3: CYAN signal Pin 4: WHT signal
NO
CHECK • SENSOR BOARD
YES
REPLACE IC104, DL103 [PROCESS]
Confirm horizontal integration (HIR) signal at pin 1 of PG102 [PROCESS]
NO
YES
CHECK • IC101-103 [PROCESS]
Confirm following pulses in CN002, CN003 and CN005 [SENSOR] CN002-1: H. IR CN003-1: H2 CN005-2: MP CN005-3: CP
NO
YES
Confirm following pulses input to CN004 [SENSOR] Pin 2: SYNC Pin 3: CHD
NO
YES
CHECK • IC108 [PROCESS]
Confirm following output signals at CN001 pins [SENSOR] Pin 2: YEL signal Pin 3: CYAN signal Pin 4: WHT signal
NO
YES
CHECK •SENSOR BOARD
CHECK • PROCESS BOARD
Correct connections

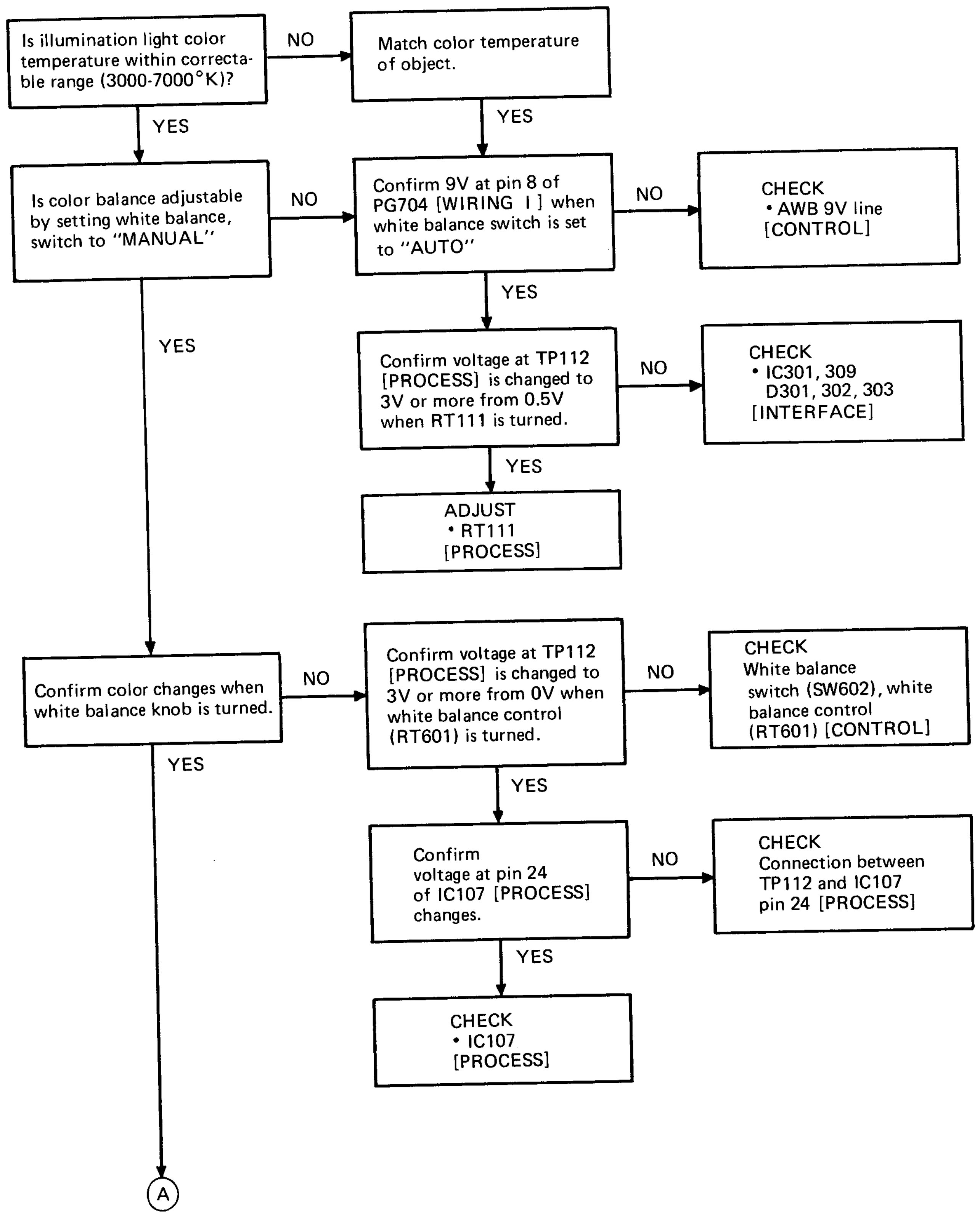
2. No color

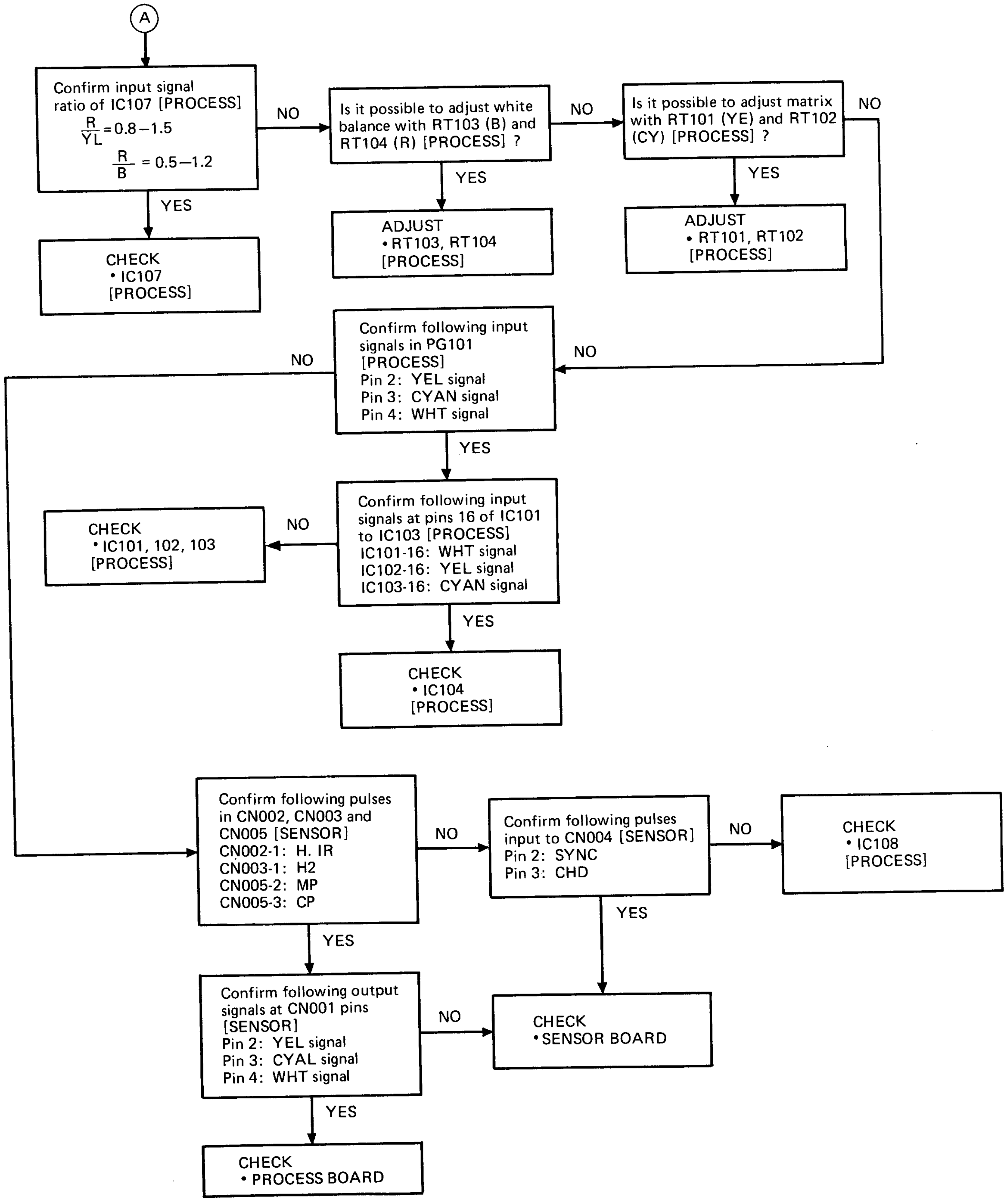

Is channel tuned correctly when receiving broadcast via monitor TV?
NO
Tune in channel.
YES
Is TV tuned correctly?
NO
Tune correctly.
YES
Is color of TV adjusted correctly?
NO
Adjust color of TV using colorbar signal.
YES
Confirm burst signal in camera output signal at pin 23 of IC108 [PROCESS]
NO
CHECK • IC108 [PROCESS]
YES
Confirm following color difference signal inputs in IC108 [PROCESS] Pin 26: B-YL signal Pin 27: R-YL signal
YES
CHECK • IC108 [PROCESS]
NO
Confirm following color difference signal inputs in IC109 [PROCESS] Pin 8: B-Y signal Pin 10: R-Y signal
YES
Confirm sub carrier signal at pin 13 of IC109 [PROCESS]
NO
CHECK • IC108 [PROCESS]
YES
REPLACE • IC109 [PROCESS]
NO
Confirm following signals at TP108 to TP110 [PROCESS] TP108: RED signal TP109: BLUE signal TP110: GREEN signal
NO
Confirm input signals in filter IC [PROCESS] IC105 pin 3: GREEN signal IC106 pin 2: BLUE signal IC106 pin 3: RED signal
YES
CHECK • IC105, 106 [PROCESS]
NO
Confirm following output signals in IC104 [PROCESS] Pin 7: GREEN signal Pin 6: BLUE signal Pin 9: RED signal
YES
CHECK • Q101, 102 [PROCESS]
NO
CHECK • IC104 [PROCESS]
YES
Confirm black balance adjustment RT106: BLUE setup RT107: RED setup RT112: GREEN setup [PROCESS]
NO
ADJUST • RT106, RT107, RT112 [PROCESS]
YES
CHECK • IC107 • Q106, 107, 108 [PROCESS]

3. Dark part colored, whole picture colored (black balance drifted)

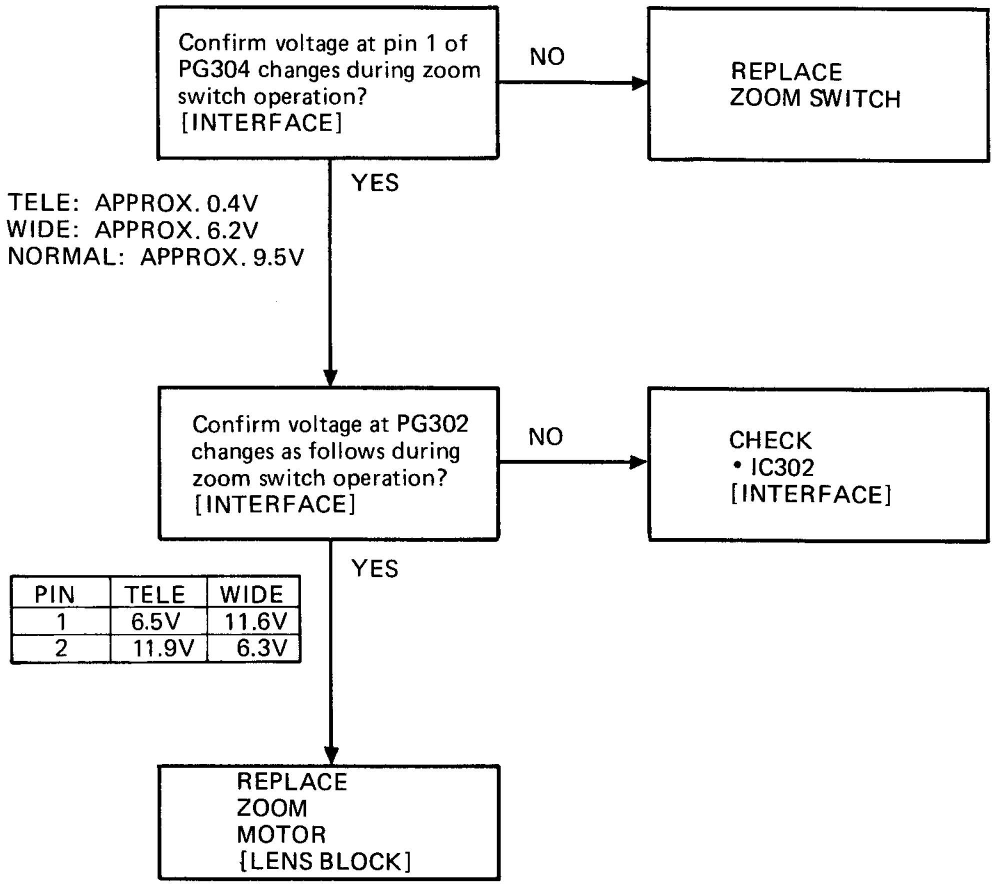

Is black balance of monitor TV adjusted correctly?
NO
Adjust black balance
YES
Is it possible to adjust black balance with RT106 (R), RT107 (B) and RT112 (G) [PROCESS]
NO
Confirm OBP signal at pin 8 of IC108 [PROCESS]
NO
REPLACE
Clamp capacitors C135, 136, 137 [PROCESS]
YES
ADJUST RT106, RT107, RT112 [PROCESS]
YES
Confirm $\overline{\text{OBP}}$ signal at pin 9 of IC108 [PROCESS]
NO
YES
Confirm clamp capacitor in IC107 [PROCESS]
C135: RED (Pin 25)
C136: BLUE (Pin 26)
C137: GREEN (Pin 21)
NO
CHECK
• IC108 [PROCESS]
YES
CHECK
•IC107 [PROCESS]
Is it possible to adjust white balance with RT103 (B) and RT104 (R) [PROCESS]
NO
Is it possible to adjust matrix with RT101(YEL) and RT102 (Cy)? [PROCESS]
NO
Confirm following input signals to PG101 [PROCESS]
Pin 2: YEL signal
Pin 3: CYAN signal
Pin 4: WHT signal
NO
YES
ADJUST
• RT103, RT104 [PROCESS]
YES
ADJUST
• RT101, RT102 [PROCESS]
YES
Confirm horizontal integration (HIR) signal at pin 1 of PG102 [PROCESS]
NO
CHECK
• Sensor board
YES
CHECK
• IC101, 102, 103 [PROCESS]
Confirm following pulses in CN002, CN003 and CN005 [SENSOR]
CN002-1: H.IR
CN003-1: H2
CN005-2: MP
CN005-3: CP
NO
Confirm following pulses input to CN004 [SENSOR]
Pin 2: SYNC
Pin 3: CHD
NO
CHECK
• IC108 [PROCESS]
YES
YES
Confirm following output signals at CN001 pins [SENSOR]
Pin 2: YEL signal
Pin 3: CYAN signal
Pin 4: WHT signal
NO
CHECK
• SENSOR BOARD
YES
CHECK
• Process board

4. White balance not obtained


Is illumination light color temperature within correctable range (3000-7000°K)?
NO
Match color temperature of object.
YES
YES
Is color balance adjustable by setting white balance, switch to "MANUAL"
NO
Confirm 9V at pin 8 of PG704 [WIRING I] when white balance switch is set to "AUTO"
NO
CHECK
• AWB 9V line
[CONTROL]
YES
YES
Confirm voltage at TP112 [PROCESS] is changed to 3V or more from 0.5V when RT111 is turned.
NO
CHECK
• IC301, 309
D301, 302, 303
[INTERFACE]
YES
ADJUST
• RT111
[PROCESS]
Confirm color changes when white balance knob is turned.
NO
Confirm voltage at TP112 [PROCESS] is changed to 3V or more from 0V when white balance control (RT601) is turned.
NO
CHECK
White balance switch (SW602), white balance control (RT601) [CONTROL]
YES
YES
Confirm voltage at pin 24 of IC107 [PROCESS] changes.
NO
CHECK
Connection between TP112 and IC107 pin 24 [PROCESS]
YES
CHECK
• IC107
[PROCESS]
A

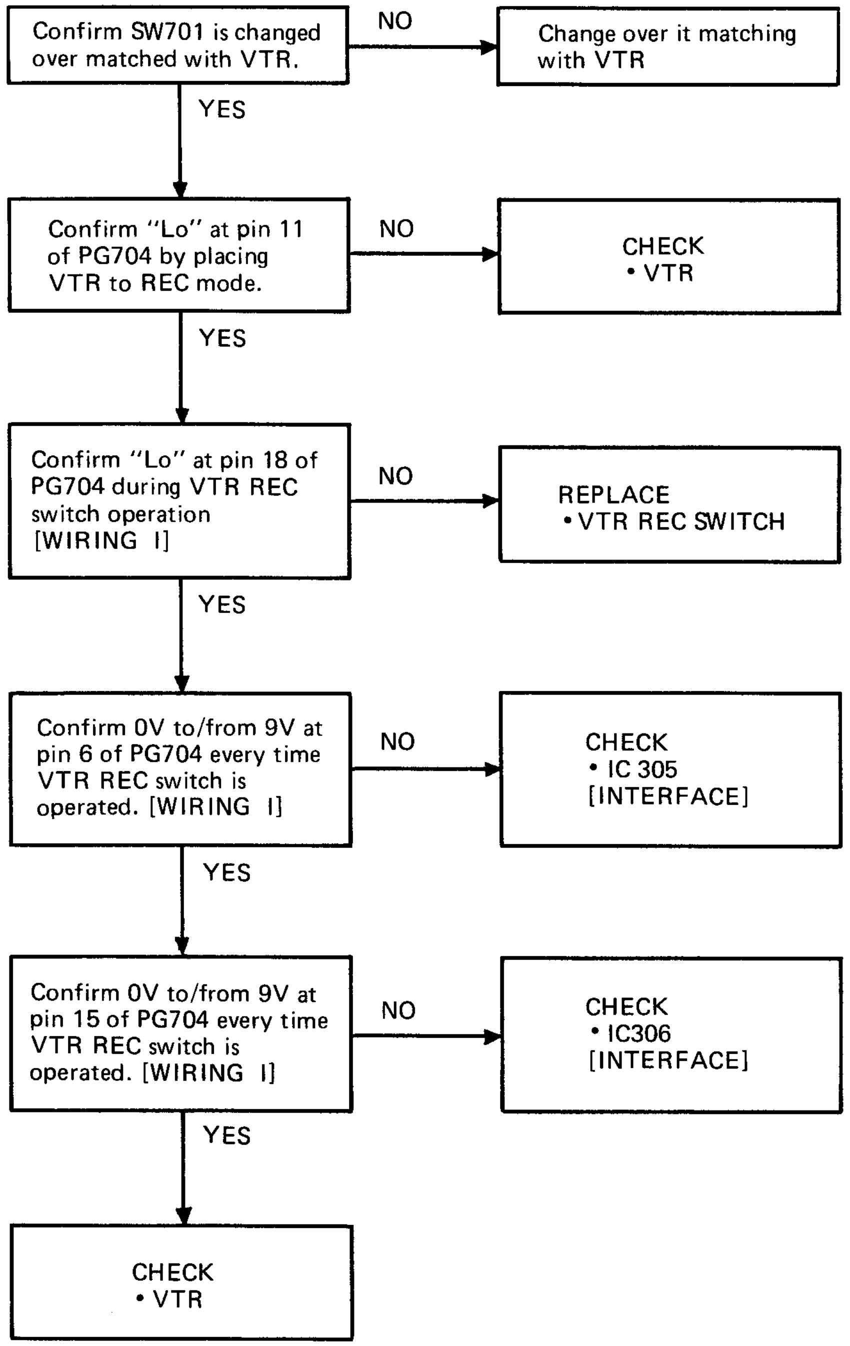

A
Confirm input signal ratio of IC107 [PROCESS]
R/YL = 0.8—1.5
R/B = 0.5—1.2
NO
Is it possible to adjust white balance with RT103 (B) and RT104 (R) [PROCESS] ?
NO
Is it possible to adjust matrix with RT101 (YE) and RT102 (CY) [PROCESS] ?
NO
YES
CHECK
• IC107
[PROCESS]
YES
ADJUST
• RT103, RT104
[PROCESS]
YES
ADJUST
• RT101, RT102
[PROCESS]
Confirm following input signals in PG101 [PROCESS]
Pin 2: YEL signal
Pin 3: CYAN signal
Pin 4: WHT signal
NO
NO
YES
CHECK
• IC101, 102, 103
[PROCESS]
NO
Confirm following input signals at pins 16 of IC101 to IC103 [PROCESS]
IC101-16: WHT signal
IC102-16: YEL signal
IC103-16: CYAN signal
YES
CHECK
• IC104
[PROCESS]
Confirm following pulses in CN002, CN003 and CN005 [SENSOR]
CN002-1: H. IR
CN003-1: H2
CN005-2: MP
CN005-3: CP
NO
Confirm following pulses input to CN004 [SENSOR]
Pin 2: SYNC
Pin 3: CHD
NO
CHECK
• IC108
[PROCESS]
YES
YES
Confirm following output signals at CN001 pins [SENSOR]
Pin 2: YEL signal
Pin 3: CYAL signal
Pin 4: WHT signal
NO
CHECK
• SENSOR BOARD
YES
CHECK
• PROCESS BOARD

5. Power zoom does not operate

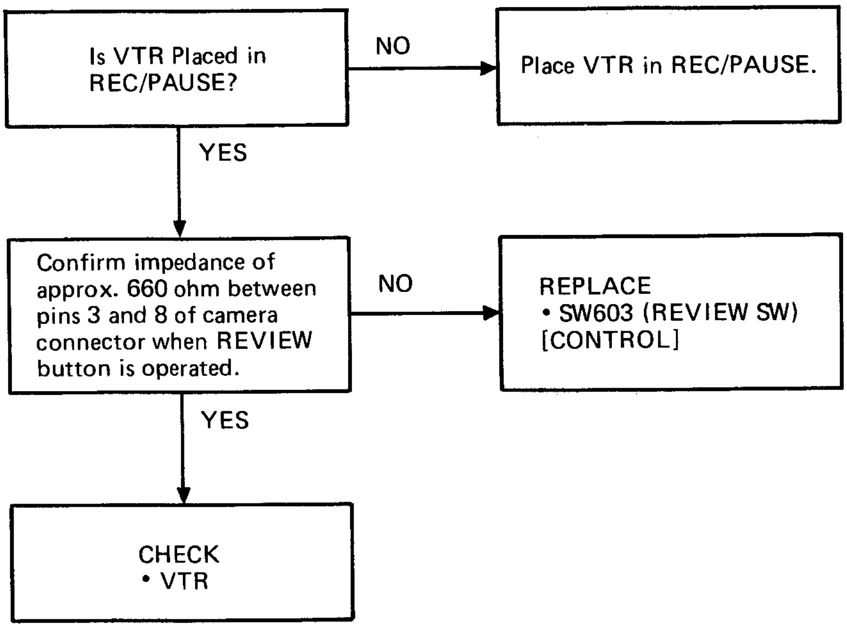

Confirm voltage at pin 1 of PG304 changes during zoom switch operation? [INTERFACE]
NO
REPLACE ZOOM SWITCH
YES
TELE: APPROX. 0.4V
WIDE: APPROX. 6.2V
NORMAL: APPROX. 9.5V
Confirm voltage at PG302 changes as follows during zoom switch operation? [INTERFACE]
NO
CHECK • IC302 [INTERFACE]
YES
REPLACE ZOOM MOTOR {LENS BLOCK]

PIN	TELE	WIDE
1	6.5V	11.6V
2	11.9V	6.3V

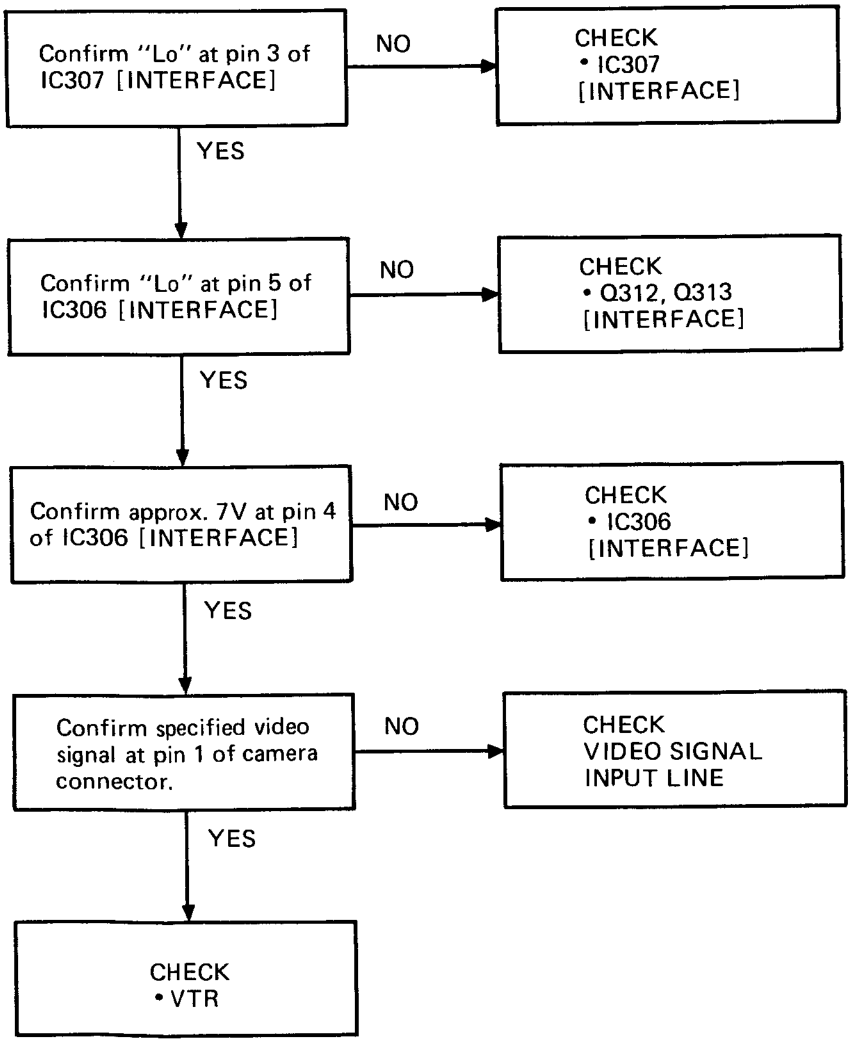
6. Camera pause does not operate correctly


Confirm SW701 is changed over matched with VTR.
NO
Change over it matching with VTR
YES
Confirm "Lo" at pin 11 of PG704 by placing VTR to REC mode.
NO
CHECK • VTR
YES
Confirm "Lo" at pin 18 of PG704 during VTR REC switch operation [WIRING I]
NO
REPLACE • VTR REC SWITCH
YES
Confirm 0V to/from 9V at pin 6 of PG704 every time VTR REC switch is operated. [WIRING I]
NO
CHECK • IC 305 [INTERFACE]
YES
Confirm 0V to/from 9V at pin 15 of PG704 every time VTR REC switch is operated. [WIRING I]
NO
CHECK • IC306 [INTERFACE]
YES
CHECK • VTR

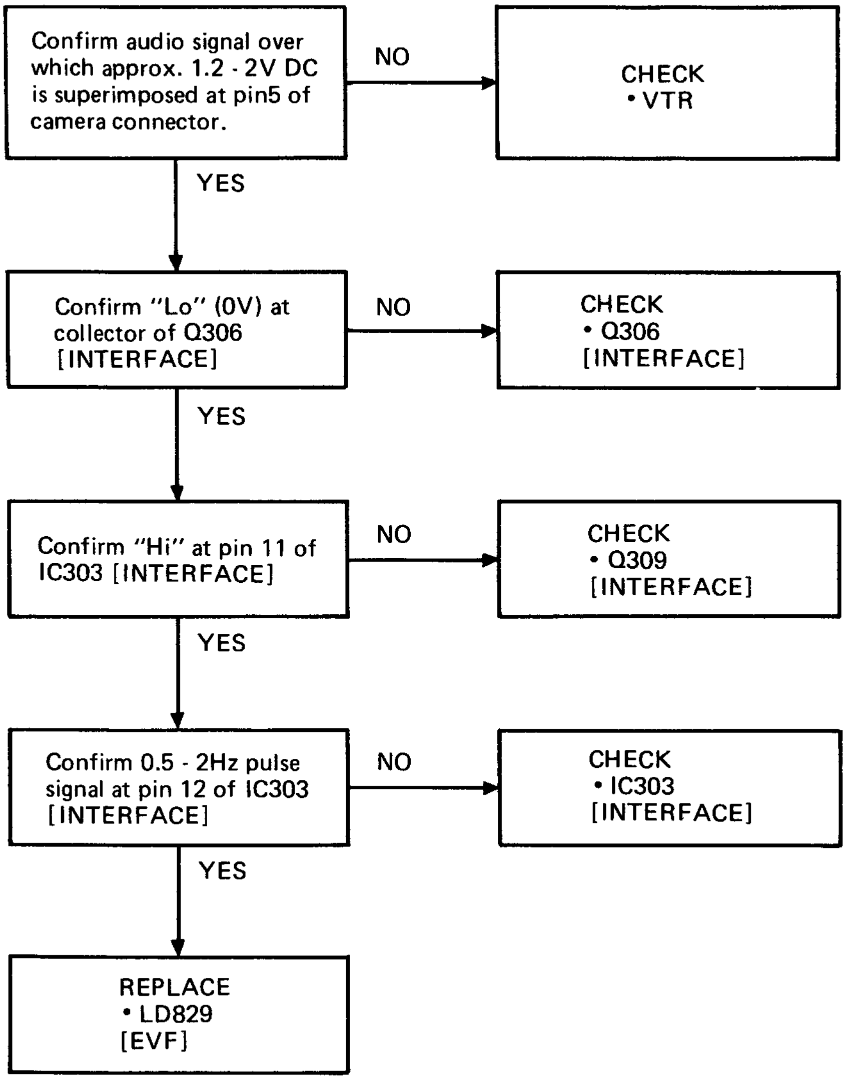
7. Record check does not operate


Is VTR Placed in REC/PAUSE?
NO
Place VTR in REC/PAUSE.
YES
Confirm impedance of approx. 660 ohm between pins 3 and 8 of camera connector when REVIEW button is operated.
NO
REPLACE
• SW603 (REVIEW SW)
[CONTROL]
YES
CHECK
• VTR

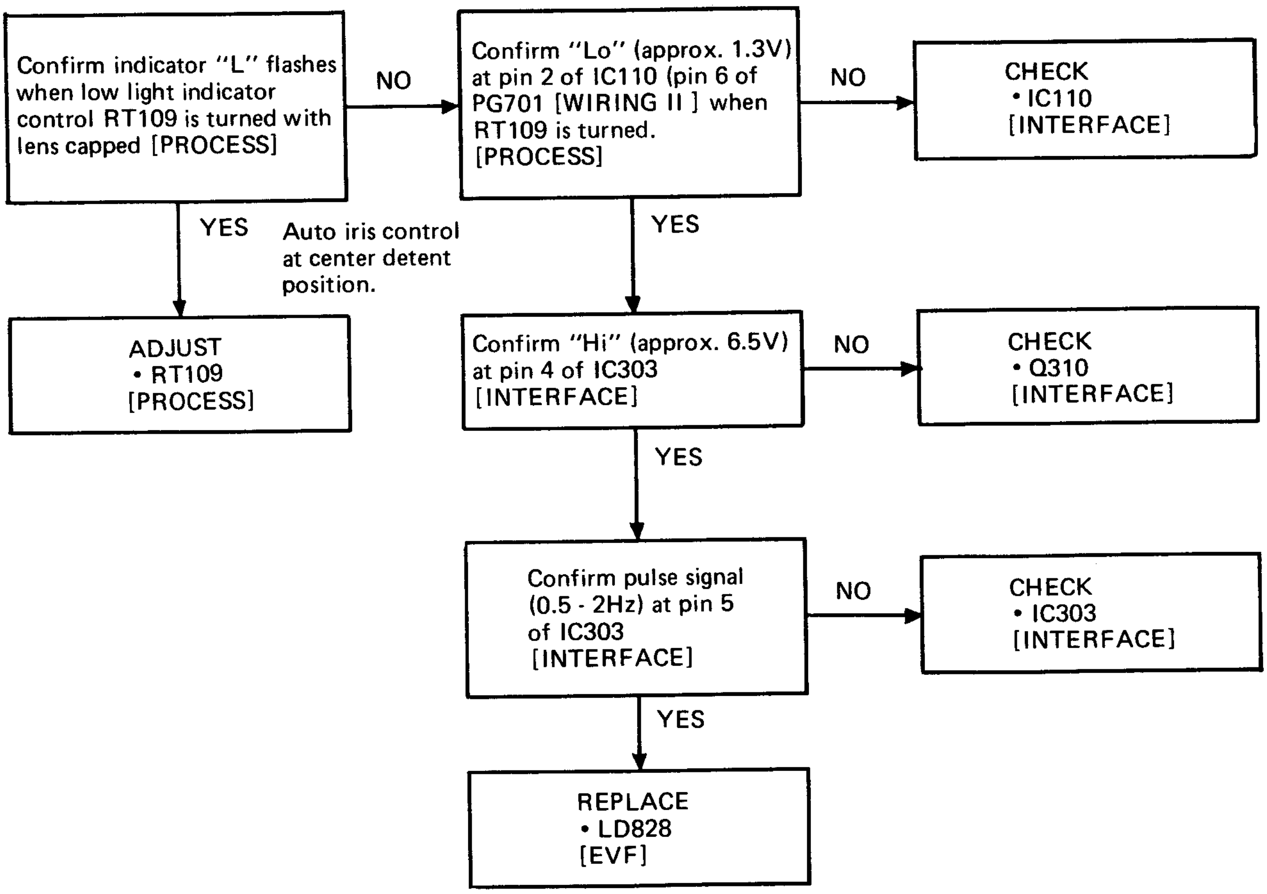
8. Power save does not function during VTR play (Process circuit operates).


Confirm "Lo" at pin 3 of IC307 [INTERFACE]
NO
CHECK
• IC307
[INTERFACE]
YES
Confirm "Lo" at pin 5 of IC306 [INTERFACE]
NO
CHECK
• Q312, Q313
[INTERFACE]
YES
Confirm approx. 7V at pin 4 of IC306 [INTERFACE]
NO
CHECK
• IC306
[INTERFACE]
YES
Confirm specified video signal at pin 1 of camera connector.
NO
CHECK
VIDEO SIGNAL
INPUT LINE
YES
CHECK
• VTR

9. "B" (LOW BATT. INDI.) does not flash at low voltage (Battery exhausted).

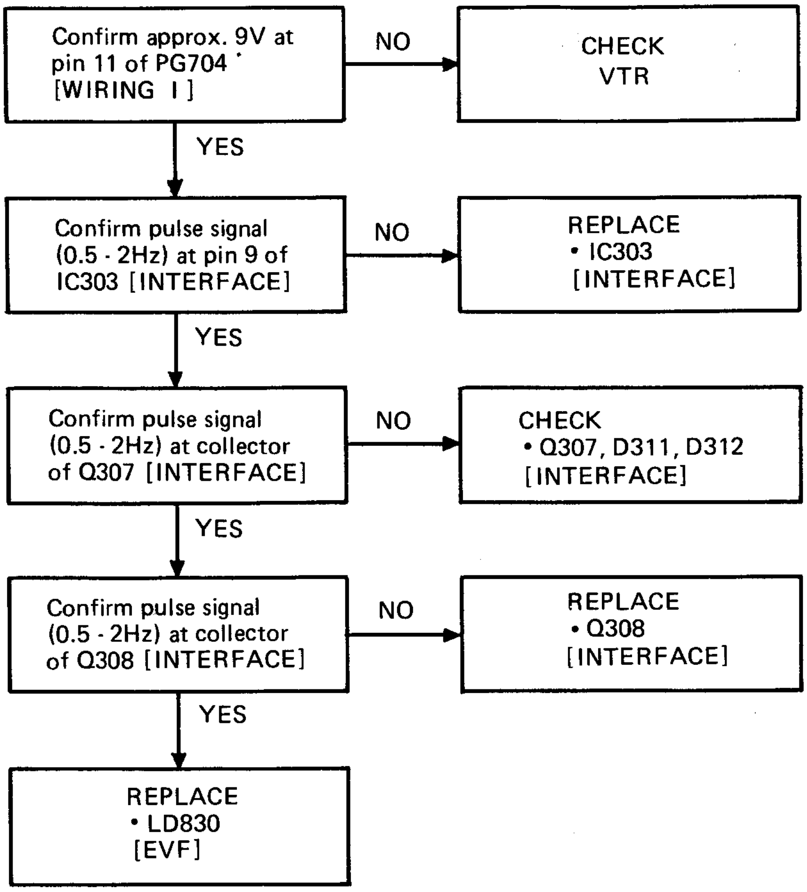

Confirm audio signal over which approx. 1.2 - 2V DC is superimposed at pin5 of camera connector.
NO
CHECK
• VTR
YES
Confirm "Lo" (0V) at collector of Q306 [INTERFACE]
NO
CHECK
• Q306
[INTERFACE]
YES
Confirm "Hi" at pin 11 of IC303 [INTERFACE]
NO
CHECK
• Q309
[INTERFACE]
YES
Confirm 0.5 - 2Hz pulse signal at pin 12 of IC303 [INTERFACE]
NO
CHECK
• IC303
[INTERFACE]
YES
REPLACE
• LD829
[EVF]

10. "L" (LOW LIGHT INDI.) does not flash in low illumination (with lens capped).

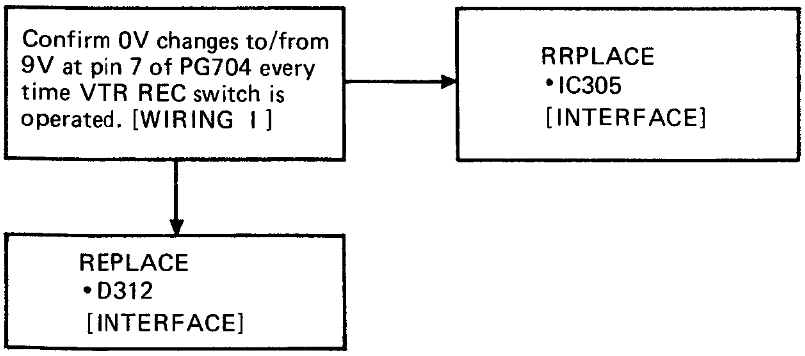

Confirm indicator "L" flashes when low light indicator control RT109 is turned with lens capped [PROCESS]
NO
YES
Auto iris control at center detent position.
ADJUST • RT109 [PROCESS]
Confirm "Lo" (approx. 1.3V) at pin 2 of IC110 (pin 6 of PG701 [WIRING II] when RT109 is turned. [PROCESS]
NO
CHECK • IC110 [INTERFACE]
YES
Confirm "Hi" (approx. 6.5V) at pin 4 of IC303 [INTERFACE]
NO
CHECK • Q310 [INTERFACE]
YES
Confirm pulse signal (0.5 - 2Hz) at pin 5 of IC303 [INTERFACE]
NO
CHECK • IC303 [INTERFACE]
YES
REPLACE • LD828 [EVF]

11. "V" (REC INDI.) does not light/flash correctly.

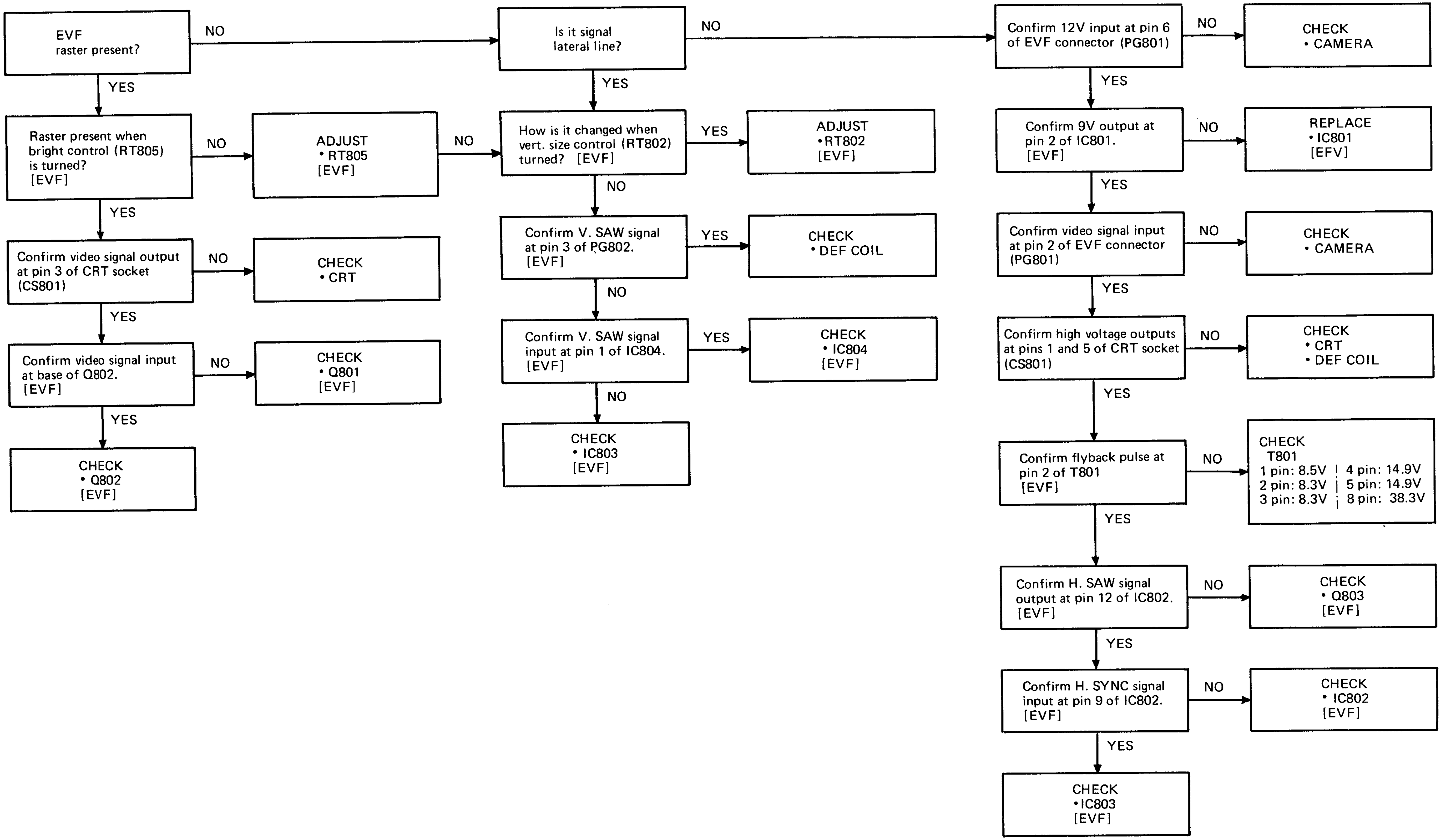
(1) "V" (REC INDI.) does not flash in modes other than REC and REC PAUSE.


Confirm approx. 9V at pin 11 of PG704 [WIRING I]
NO
CHECK VTR
YES
Confirm pulse signal (0.5 - 2Hz) at pin 9 of IC303 [INTERFACE]
NO
REPLACE • IC303 [INTERFACE]
YES
Confirm pulse signal (0.5 - 2Hz) at collector of Q307 [INTERFACE]
NO
CHECK • Q307, D311, D312 [INTERFACE]
YES
Confirm pulse signal (0.5 - 2Hz) at collector of Q308 [INTERFACE]
NO
REPLACE • Q308 [INTERFACE]
YES
REPLACE • LD830 [EVF]

(2) "V" (REC INDI.) does not light during REC and does not go off during REC/PAUSE (Flashing indication and VTR remote control operation are normal).


Confirm 0V changes to/from 9V at pin 7 of PG704 every time VTR REC switch is operated. [WIRING I]
RRPLACE •IC305 [INTERFACE]
REPLACE •D312 [INTERFACE]

12. EVF no picture


EVF raster present?
NO
YES
Raster present when bright control (RT805) is turned? [EVF]
NO
ADJUST • RT805 [EVF]
NO
YES
Confirm video signal output at pin 3 of CRT socket (CS801)
NO
CHECK • CRT
YES
Confirm video signal input at base of Q802. [EVF]
NO
CHECK • Q801 [EVF]
YES
CHECK • Q802 [EVF]
Is it signal lateral line?
NO
YES
How is it changed when vert. size control (RT802) turned? [EVF]
YES
ADJUST • RT802 [EVF]
NO
Confirm V. SAW signal at pin 3 of PG802. [EVF]
YES
CHECK • DEF COIL
NO
Confirm V. SAW signal input at pin 1 of IC804. [EVF]
YES
CHECK • IC804 [EVF]
NO
CHECK • IC803 [EVF]
Confirm 12V input at pin 6 of EVF connector (PG801)
NO
CHECK • CAMERA
YES
Confirm 9V output at pin 2 of IC801. [EVF]
NO
REPLACE • IC801 [EFV]
YES
Confirm video signal input at pin 2 of EVF connector (PG801)
NO
CHECK • CAMERA
YES
Confirm high voltage outputs at pins 1 and 5 of CRT socket (CS801)
NO
CHECK • CRT • DEF COIL
YES
Confirm flyback pulse at pin 2 of T801 [EVF]
NO
CHECK T801
1 pin: 8.5V
2 pin: 8.3V
3 pin: 8.3V
4 pin: 14.9V
5 pin: 14.9V
8 pin: 38.3V
YES
Confirm H. SAW signal output at pin 12 of IC802. [EVF]
NO
CHECK • Q803 [EVF]
YES
Confirm H. SYNC signal input at pin 9 of IC802. [EVF]
NO
CHECK • IC802 [EVF]
YES
CHECK • IC803 [EVF]

ADJUSTMENT

ADJUSTMENT CONTENTS

Camera Adjustments

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Viewfinder Adjustments

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3. Picture tilt adjustment 35
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5. Vertical size adjustment 35
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- **Before starting adjustment**

Confirm the following items before starting adjustment.

Note: The circuit board has been adjusted before assembly (unassembled circuited board), but to make sure, adjust according to the method shown below when it has been replaced.

1. Connection

Connection between the camera and power supply, monitor TV, etc.

2. Measuring equipment, tools, etc. used for adjustment

Measuring equipment:
Oscilloscope, digital voltmeter
Tools:
Adjustment screwdriver, soldering iron, color viewer (3100° K), gray scale chart (11 steps), color bar chart, tripod, monitor TV.

3. Preparation

Set the distance between the camera lens and color viewer to approx. 2 m.

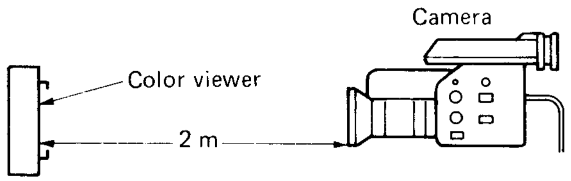


Fig. 3-1

- Operation switch positions of the camera.
  White Balance Switch: Manual position
  White Balance Control: Light-Bulb position
  Auto Iris Control: Center position
  Standby Power Switch: On position
- Set the time axis of the oscilloscope to the H period (20 μs/div or 10 μs/div) when otherwise not specified. When it is specified as V period in the text, set it to the V period (5 ms/div) and when it is specified as H period, set it to the H period.
- Shoot the chart fully over the video period when otherwise not specified when shooting the chart.
- Use the probe set to 10:1 in general.

Camera Adjustments

Note: 1. Perform drive pulse width adjustment, drive pulse frequency adjustment and clock pulse adjustment before assembling the sensor board on the lens block.
2. Be careful not to scratch or attach foreign matter to the light receiving section of the sensor during adjustment.

1. Drive pulse width adjustment

This adjustment sets the drive pulse width to the specified value.

- When the pulse width of H1 is wider than 50 nsec, fixed pattern noise becomes conspicuous; on the other hand, when it is narrower than 50 nsec, color smears become conspicuous at the horizontal edges.
- When the pulse width of H2 deviates from 50 nsec, locking of the oscillation frequency becomes unstable. (Maximum deviation causes the read-out of the sensor impossible.)

1) Connect the oscilloscope to TP001.
2) Trigger the oscilloscope at H. rate (Use TP107 on process board).
3) Adjust RT003 (H1 width) so that the pulse width is 50 ± 1 nsec where the amplitude of the waveform is 50%.
4) Change over the connection of the oscilloscope to TP002.
5) Adjust RT002 (H2 width) so that the pulse width is 50 ± 1 nsec where the amplitude of the waveform is 50%.

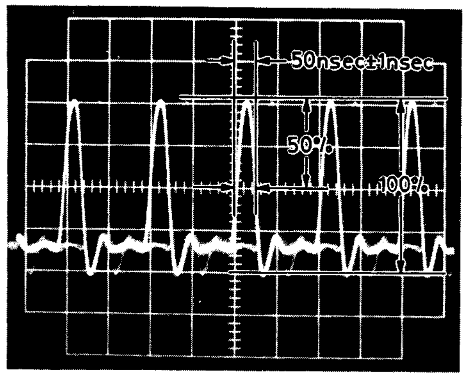


Fig. 3-2

2. Drive pulse frequency adjustment

Note: Access to adjustment is difficult unless board is removed. Removal then requires backfocus adjustment be completed.

This adjustment sets the oscillation frequency of the drive pulse to 4.8 MHz.

When this adjustment is incomplete, the PLL does not operate correctly and read-out of the sensor becomes unstable.

Note: Perform this adjustment quickly just after connecting the DVM. When the DVM is left connected to TP003 for a long time, the stray capacity of the probe makes the 3 volts drift.

1) Connect the DVM to TP003.
2) Adjust CT001 (4.8 MHz adj.) for 3.0V ± 0.01V.

Note: Confirm the drive pulse width after adjustment is completed. Readjust it when the drive pulse width is not set to 50 ± 1 nsec. (See Fig. 3-2.)

3. Clock cancel adjustment

This adjustment applies a clock signal with the reverse phase and cancels the clock signal so that it does not exceed the dynamic range of the preamp.

1) Cap the lens.
2) Connect the oscilloscope to CN001-2.
3) Trigger the oscilloscope at H. rate (use TP107 on process board).
4) Adjust RT004 (clock cancel) to minimize the peak level of the waveform.

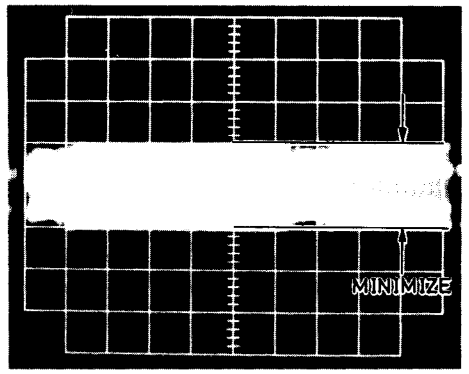


Fig. 3-3

4. Backfocus adjustment

The purpose of this adjustment is to ensure proper focus tracking throughout the zoom range.

1) Disassemble the camera and position it as shown in Fig. 3-4 with all connectors plugged in.

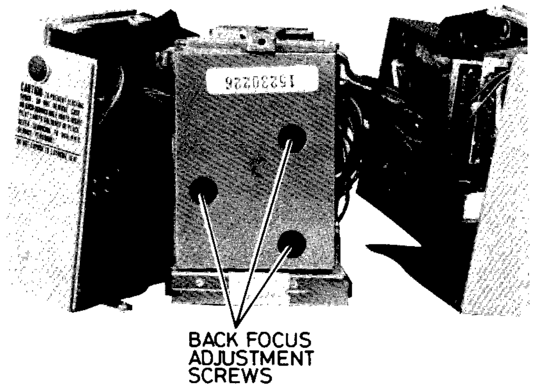


Fig. 3-4

2) Position the camera 3 meters from backfocus chart and illuminate the object with 300 lux.

3) **Set the zoom to 20 mm and the focus ring to 3 meters.**
Before starting the adjustment, turn the three (3) screws fully clockwise. Then turn them counterclockwise by approximately three (3) turns.

4) Aim the camera at the "points" of the chart and position them in section "A" on the monitor screen. (See Fig. 3-5.)

5) Adjust screw 1 on the sensor block for best focus of section "A" on the monitor screen. (See Fig. 3-5.)

6) Aim the camera at the "points" of the chart and position them in section "B" on the monitor. (See Fig.3-5.)

7) Adjust screw 2 on the sensor block for best focus of section "B" on the monitor screen. (See Fig. 3-5.)

8) Aim the camera at the "points" of the chart and position them in section "C" on the monitor. (See Fig. 3-5.)

9) Adjust screw 3 on the sensor block for best focus of section "C" on the monitor screen. (See Fig. 3-5.)

10) Repeat steps 4 through 9 as necessary to obtain best focus over all the monitor screen.

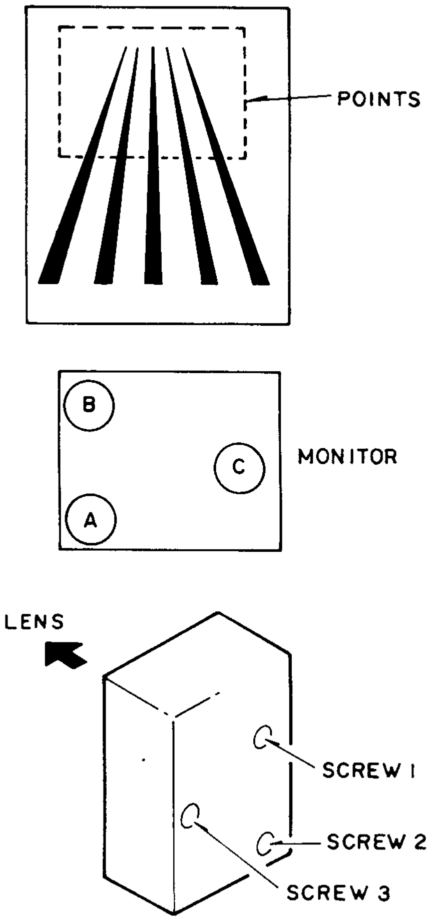


Fig. 3-5

5. Backfocus confirmation

1) Position the camera 2 meters from backfocus chart.
2) Set the zoom to 20 mm.
3) Position the chart in the center of the monitor screen.
4) Confirm that the chart comes into focus somewhere between settings 1.5 and 3.1 of the lens focus ring.

6. 5V/9V adjustment

This adjustment sets the proper operating B+ for the instrument.

1) Connect the DVM to PM301-10.
2) Adjust RT303 (5V/9V) for 5V±0.05V.

7. Power supply frequency adjustment

This adjustment optimizes the reference frequence of the regulator. When this adjustment is incomplete, ripple increases and beats become conspicuous.

1) Connect the frequency counter to the cathode of D307.
2) Adjust RT304 (Power sup. Freq.) for **54.6 kHz** ± 0.5 kHz.

8. Sub carrier frequency adjustment

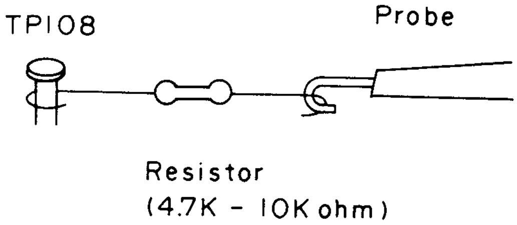
Misadjustment of the sub-carrier oscillator can cause no color, no color sync and tint problems.

1) Connect the frequency counter to **TP106.**
2) **Adjust CT101 (SC adj.) for 4.433618 MHz ± 10 Hz.**
3) **Connect the DVM to TP105.**
4) **Adjust CT103 (VCO adj.) for 2.5V±0.05V.**

9. Matrix adjustment

This adjustment adjusts the Cy and YEL signal levels input to the matrix circuit. When this adjustment is incomplete, color reproduction is degraded.

1) Aim the camera at the color bar chart.
2) Connect the oscilloscope to TP108 via a resistor (4.7 k ~ 10 k ohm).



3) Trigger the oscilloscope at H. rate (use TP107 on process board).
4) Using the auto iris control, set the white peak for 0.7 V from blanking.
5) **Adjust RT102 (CYAN matrix) to set the CYAN signal for 70 mV±5 mV from blanking.**

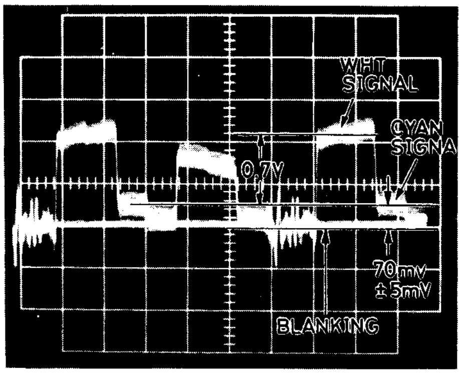


Fig. 3-6

6) Change over the connection of the oscilloscope to TP109.
7) Adjust RT101 (YEL matrix) to set the RED signal level to the blanking.
8) Return the auto iris control to the center position.

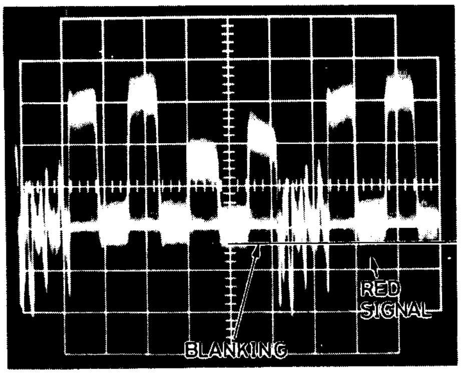


Fig. 3-7

10. White balance control position adjustment

1) Cap the lens.
2) Connect the DVM to TP112.
3) Adjust the white balance control (on the side of camera) for 1.4V± 0.05V.

11. Black balance adjustment

This procedure sets the proper black balance of the picture.

1) Cap the lens.
2) Connect the oscilloscope to PG707-1.
3) Trigger the oscilloscope at H. rate. (Use TP107 on process board.)
4) Connect TP108 and TP109 to ground.
5) Adjust RT112 (Green setup) so that carrier of the waveform is minimized.
6) Remove the ground connections from TP108 and TP109.
7) Alternately adjust RT106 (Blue setup) and RT107 (Red setup) so that the carrier of the waveform is minimized.

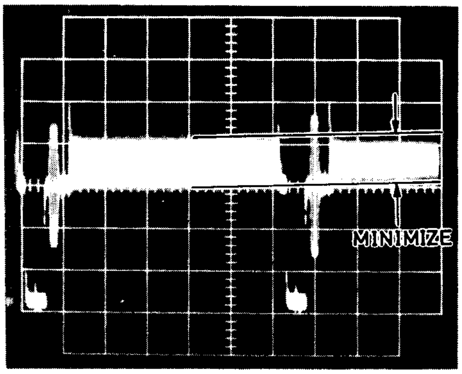


Fig. 3-8

8) Adjust RT105 (Y setup) for 35 mV ± 17 mV from blanking to the center of the waveform.

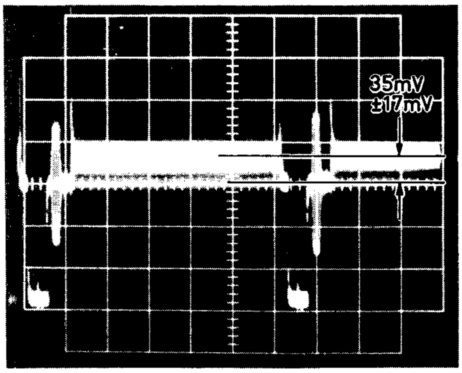


Fig. 3-9

12. White balance adjustment

This procedure sets the correct red and blue signal levels for proper white balance circuit operation.

1) Aim the camera at the gray scale chart.
2) Connect the oscilloscope to PG707-1.
3) Alternately adjust RT104 (Red gain) and RT103 (Blue gain) so that the carrier for every step of the gray scale is minimized.

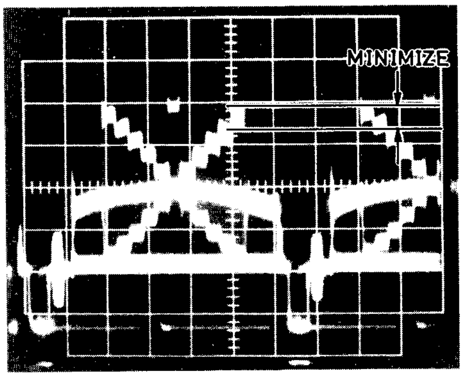


Fig. 3-10

13. H. transient cancel adjustment

This adjustment matches the white, cyan and yellow delay times to minimize smear in the horizontal direction.

1) Aim the camera at the gray scale chart.
2) Adjust CT102 (H. transi) to minimize smear in sections where black changes to gray and white changes to gray on the gray scale chart.

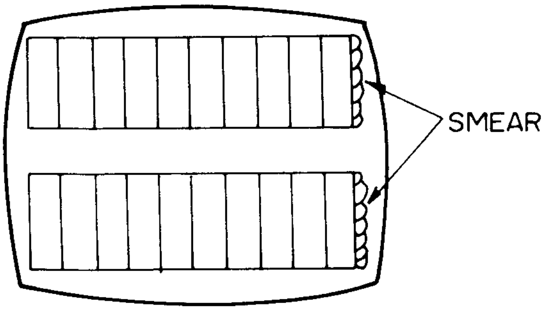


Fig. 3-11

14. Video level adjustment

Make this adjustment to set the balance point of the automatic iris. Depending on the Video level setting (too high or too low), an incorrect adjustment could cause the image to appear dark or bright under normal lighting.

1) Aim the camera at the gray scale chart.
2) Connect the oscilloscope to PG707-1.
3) Trigger the oscilloscope at H. rate. (Use TP107 on process board.)
4) Turn the auto iris control fully clockwise and then set it to its detented position.
5) **Adjust RT110 (AIC set) for 0.74Vp-p±0.035V from blanking to the top of the gray scale waveform.**

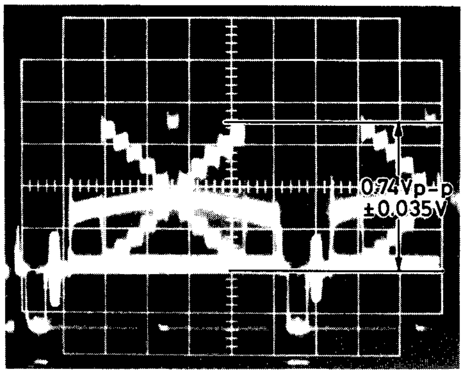


Fig. 3-12

15. Low light indicator adjustment

This adjustment sets the point at which the "Low Light" graphics are displayed, indicating there is too little light. Depending on the setting, an incorrect adjustment can cause the "Low Light" graphics to be displayed under normal lighting levels or not to be displayed under low lighting levels.

1) Cap the lens.
2) Connect the DVM to IC110-1 and note reading.
3) Connect the DVM to IC110-4.
4) Adjust RT109 (Low light) so the potential at IC110-4 is 1V to 1.5V higher than the potential noted at IC110-1.

16. Chroma level adjustment

Misadjustment cause color, vertical smear and/or color noise.

1) Aim the camera at the color bar chart.
2) Connect the oscilloscope to PG707-1.
3) Trigger the oscilloscope at H. rate. (Use TP107 on process board.)
4) Using the auto iris control, set the white peark for 0.74 V from blanking.

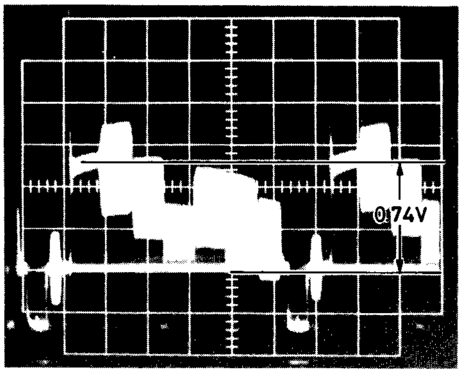


Fig. 3-13

5) Adjust RT108 (chroma level) so the Red level of the waveform is 0.62Vp-p±0.03V.

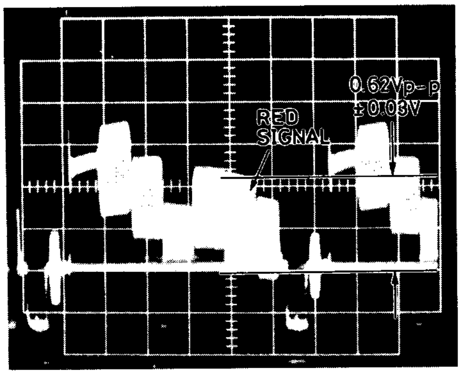


Fig. 3-14

17. Burst level adjustment

This adjustment determines the position of color saturation.

1) Aim the camera at the gray scale chart.
2) Connect the oscilloscope to PG707-1.
3) Trigger the oscilloscope at H. rate. (Use TP107 on process board.)
4) Make two waveforms of the burst signal appear on the oscilloscope.
5) Alternately adjust RT113 (B-Y Burst) and RT114 (R-Y Burst) for 280 mVp-p ± 35 mV of both burst waveforms.

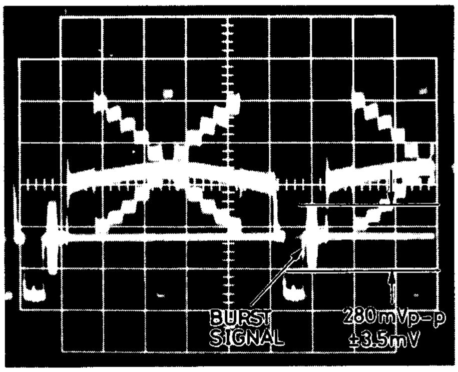


Fig. 3-15

18. Auto white balance adjustment

This adjustment ensures proper white balance operation when the camera is used in sunlight or with tungsten/quartz lighting.

1) Aim the camera at a white object outdoors.
2) Set zoom to telephoto.
3) Adjust RT301 (Auto white offset) that the object is seen as white on the monitor screen.
4) Aim the camera at an incandescent lamp (100W or more) 1.5∼3 m away.
5) Adjust AT111 (Auto white gain) so that the incandescent lamp is seen as white on the monitor screen.

Viewfinder Adjustments

1. Horizontal hold adjustment

This procedure sets the horizontal sync **frequency.**

1) Connect the frequency counter to IG802-12 on the electronic viewfinder board.
2) **Connect a 0.47 μF capacitor between pins 1 and 2 of PG801.**
3) **Adjust RT801 (H. HOLD) for 15.52 kHz ±0.1 kHz.**
4) **Remove capacitor.**

2. Focus adjustment

This adjustment sets the focus so that sharpness of the picture is best.

1) Aim the camera at the resolution chart.
2) Adjust **RT803 (Focus)** for best resolution in the viewfinder.

3. Picture tilt adjustment

This procedure is used to set the picture tilt of the EVF image.

1) Make sure the camera is level with respect to the chart.
2) Loosen the deflection coil holding screw.
3) Observe the viewfinder, and turn the deflection coil until the image is straight.
4) Tighten the screw holding the deflection coil.

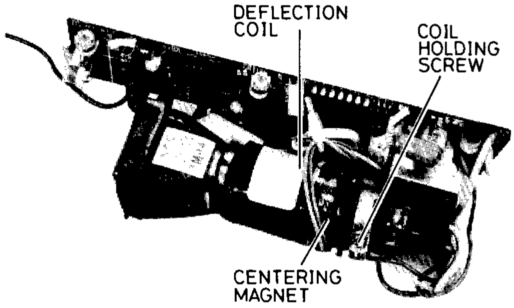


Fig. 3-16

4. Centering magnets adjustment

This adjustment sets the center of the image viewed by the camera to the center the EVF screen.

1) Aim the camera at a resolution chart.
2) Adjust the centering magnets until the center of the picture (+) comes to the center of the viewfinder raster. (See Fig. 3-16.)

5. Vertical size adjustment

This adjustment determines the vertical deflection size.

1) Aim the camera at a resolution chart, and line up the reference arrow head with the edge of the raster (blanking) on the EVF.
2) **Adjust RT802 (V. size) so that the circle in the chart is round.**

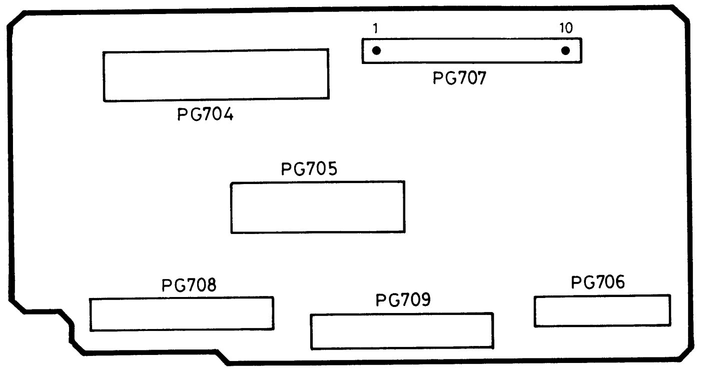
6. Contrast and brightness adjustment

This procedure sets the normal viewing level of the picture.

1) Aim the camera at the gray scale chart.
2) **Adjust RT805 (Brightness) and RT804 (Contrast) so** that B/W tip graduations on the viewfinder screen, match those on the monitor.

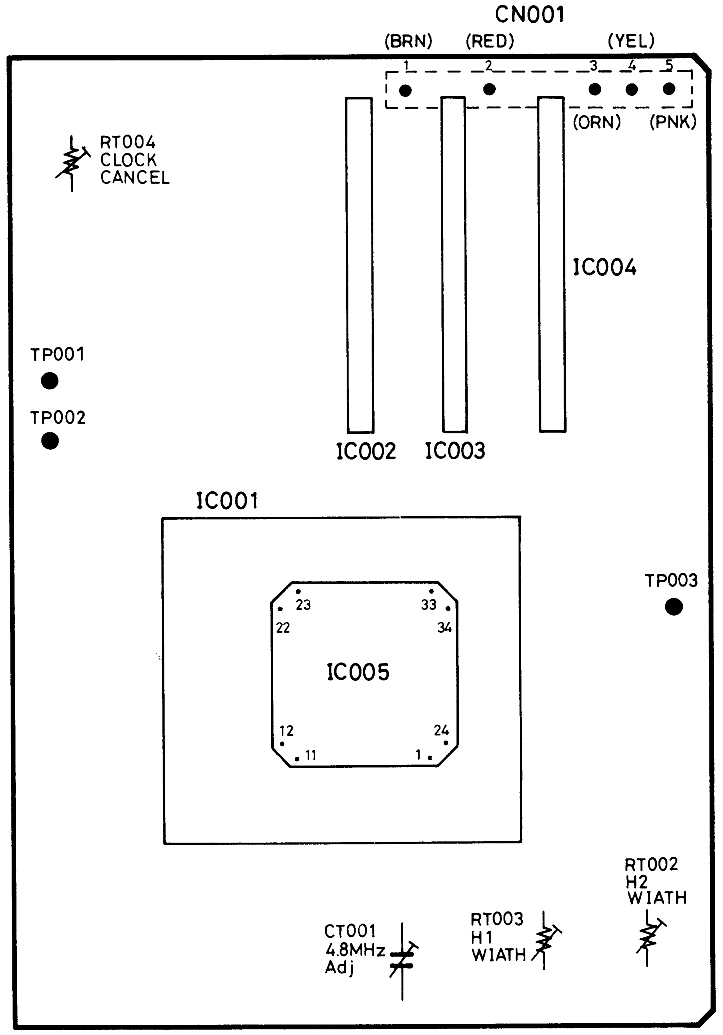
MEMO

TEST POINTS AND CONTROLS



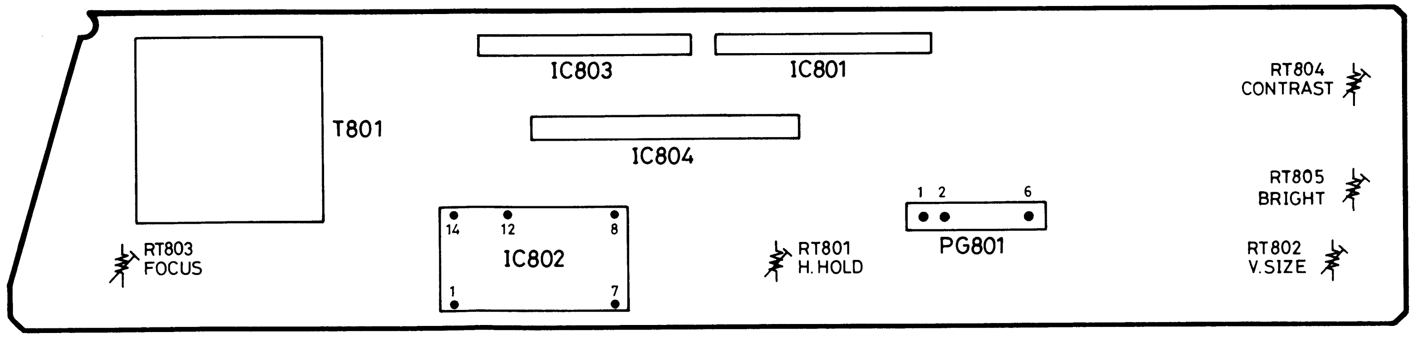
1
10
PG707
PG704
PG705
PG708
PG709
PG706

Wiring I test points (component side)



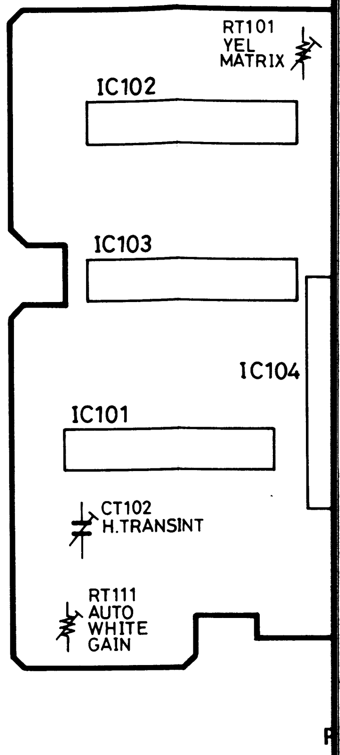
CN001
(BRN)
(RED)
(YEL)
1
2
3
4
5
(ORN)
(PNK)
RT004
CLOCK
CANCEL
IC004
TP001
TP002
IC002
IC003
IC001
TP003
23
33
22
34
IC005
12
24
11
1
RT002
H2
WIATH
CT001
4.8MHz
Adj
RT003
H1
WIATH

Sensor test point and controls (component side)

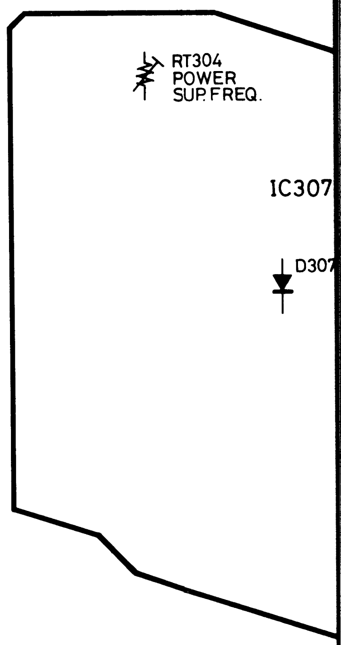


IC803
IC801
T801
IC804
RT804
CONTRAST
RT805
BRIGHT
1
2
6
PG801
14
12
8
IC802
1
7
RT803
FOCUS
RT801
H. HOLD
RT802
V.SIZE

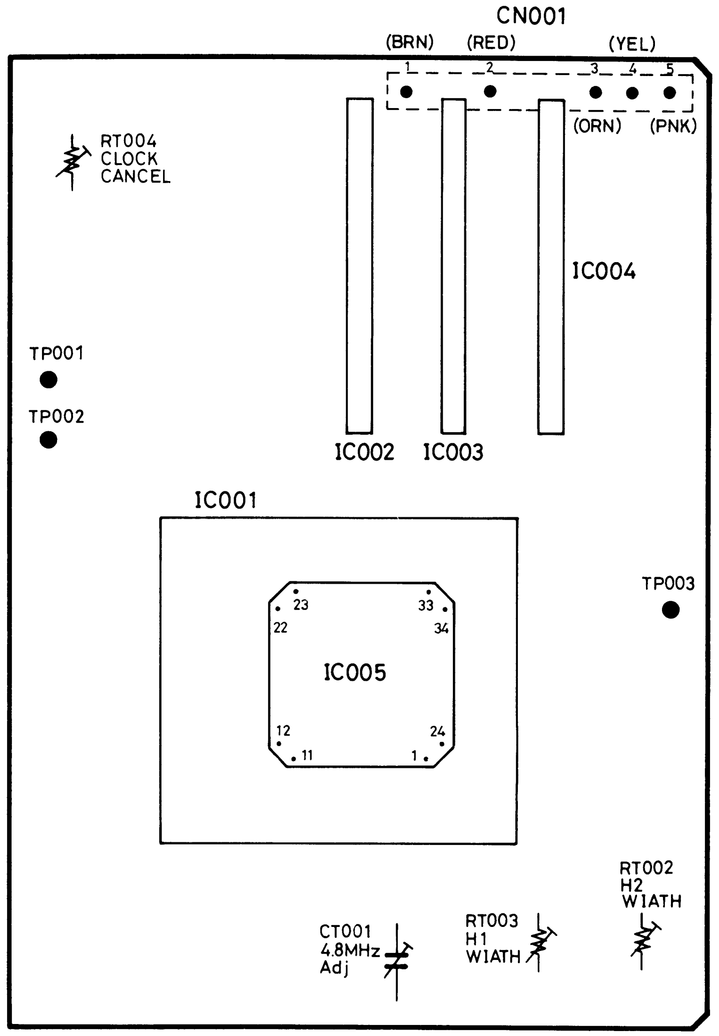
Electronic viewfinder test points and controls (component side)



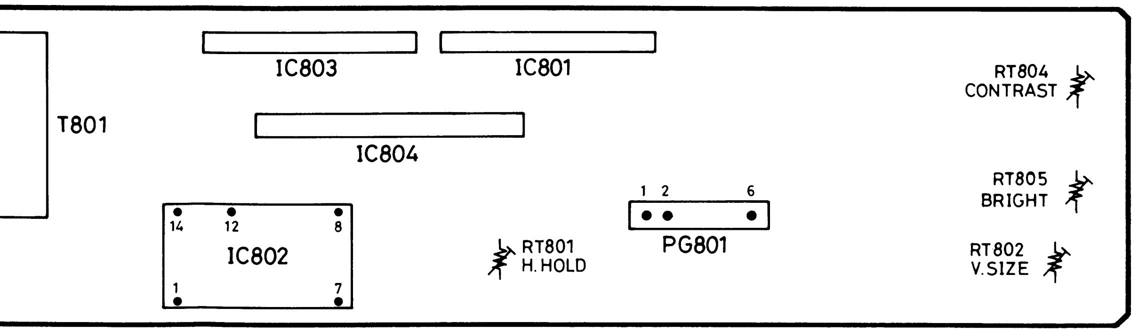
RT101
YEL
MATRIX
IC102
IC103
IC104
IC101
CT102
H.TRANSINT
RT111
AUTO
WHITE
GAIN



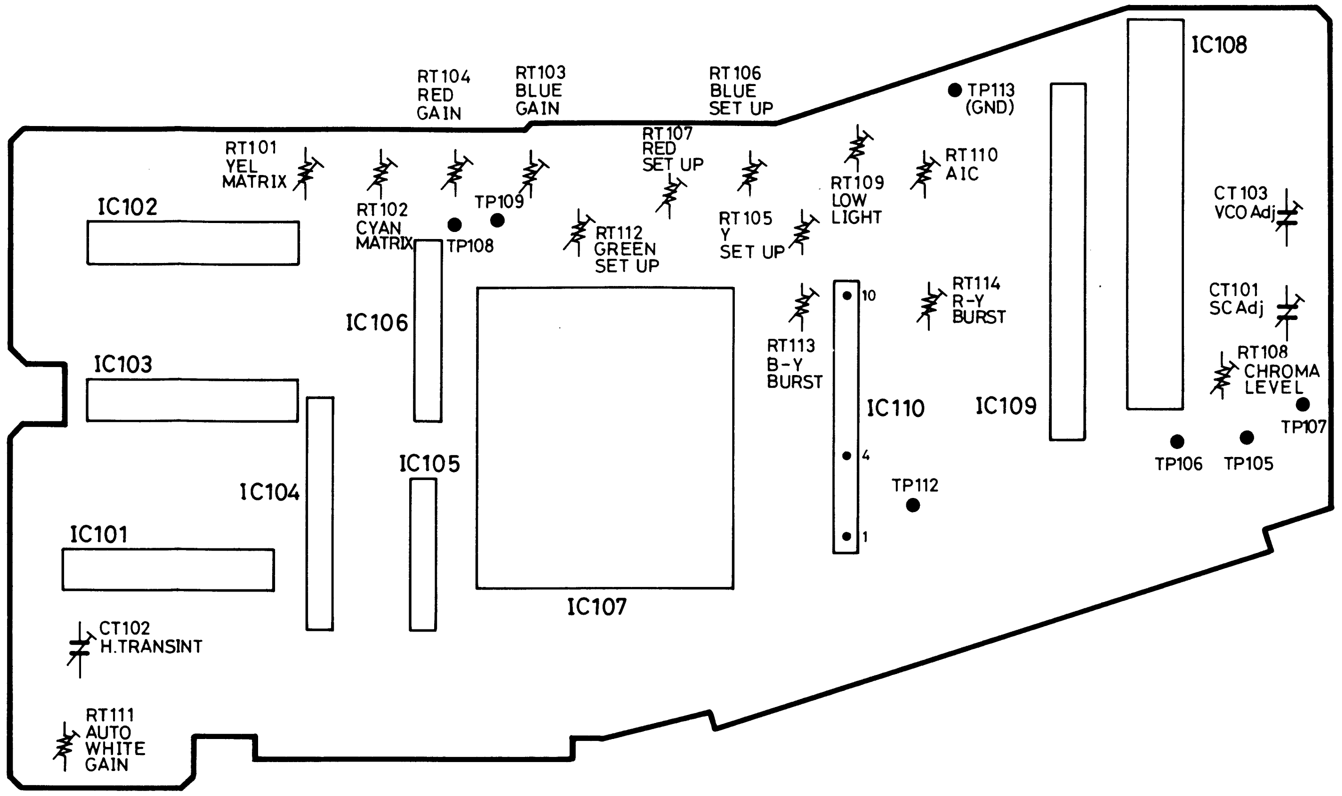
RT304
POWER
SUP.FREQ.
IC307
D307


CN001
(BRN)
(RED)
(YEL)
1
2
3
4
5
(ORN)
(PNK)
RT004
CLOCK
CANCEL
IC004
TP001
TP002
IC002
IC003
IC001
TP003
23
33
22
34
IC005
12
24
11
1
RT002
H2
WIATH
CT001
4.8MHz
Adj
RT003
H1
WIATH

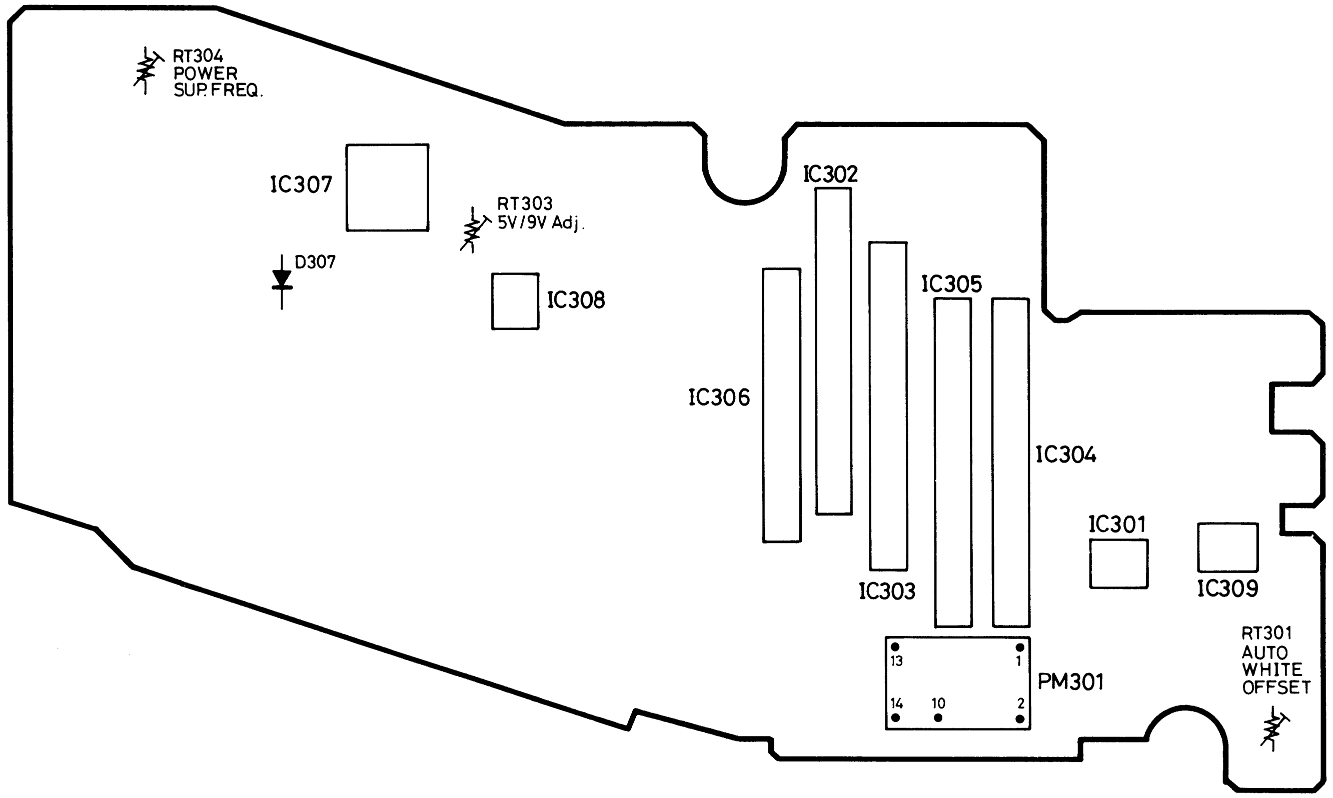
Sensor test point and controls (component side)


IC803
IC801
T801
IC804
RT804
CONTRAST
RT805
BRIGHT
14
12
8
IC802
1
7
1 2
6
PG801
RT801
H.HOLD
RT802
V.SIZE

Electronic viewfinder test points and controls (component side)


RT104
RED
GAIN
RT103
BLUE
GAIN
RT106
BLUE
SET UP
TP113
(GND)
IC108
RT101
YEL
MATRIX
RT107
RED
SET UP
RT110
AIC
RT109
LOW
LIGHT
CT103
VCO Adj
IC102
RT102
CYAN
MATRIX
TP109
TP108
RT112
GREEN
SET UP
RT105
Y
SET UP
IC106
RT113
B-Y
BURST
10
RT114
R-Y
BURST
CT101
SC Adj
RT108
CHROMA
LEVEL
IC103
IC110
IC109
TP107
TP106
TP105
4
IC105
IC104
TP112
IC101
1
IC107
CT102
H.TRANSINT
RT111
AUTO
WHITE
GAIN

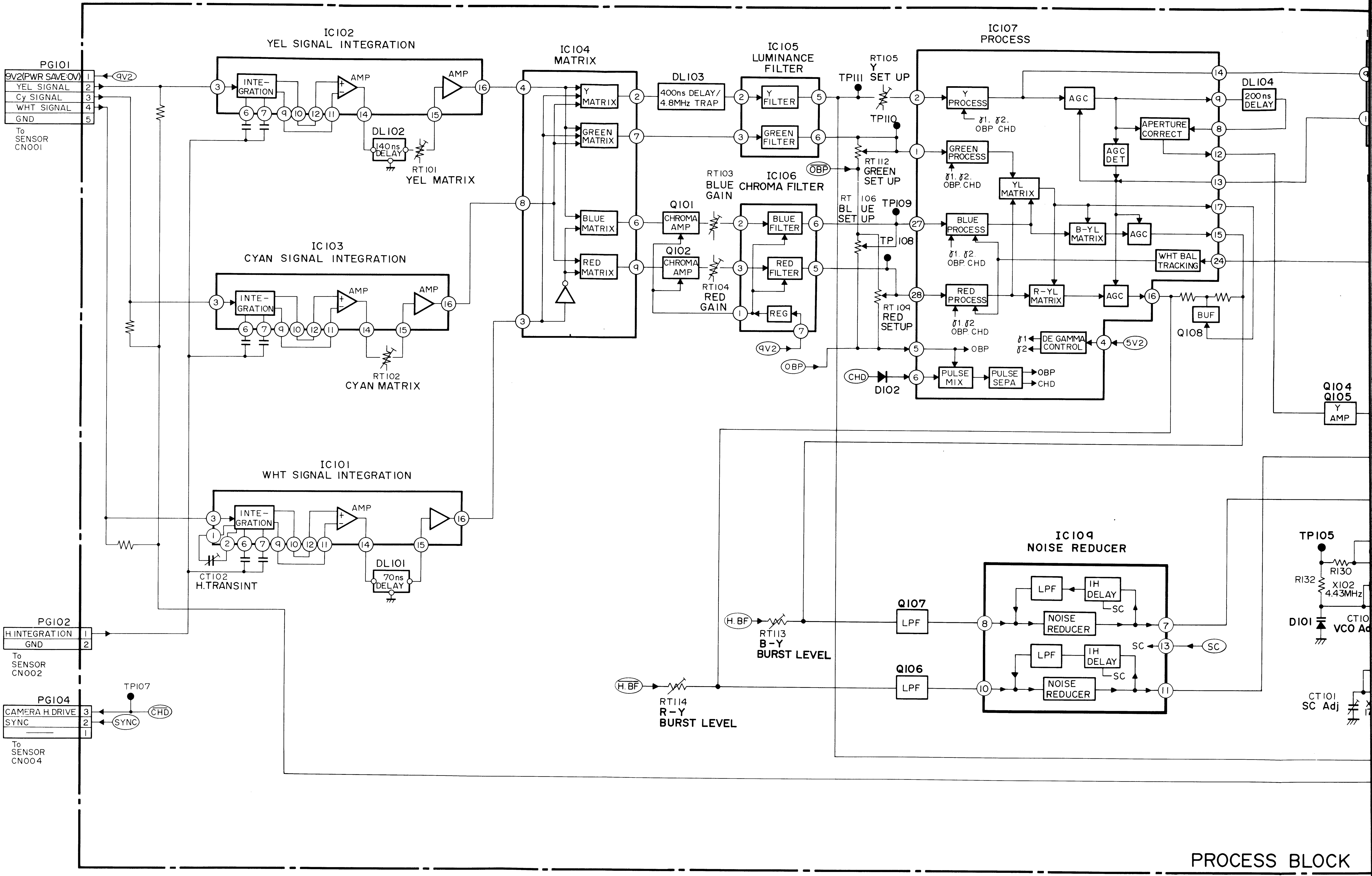
Process test points and controls (component side)

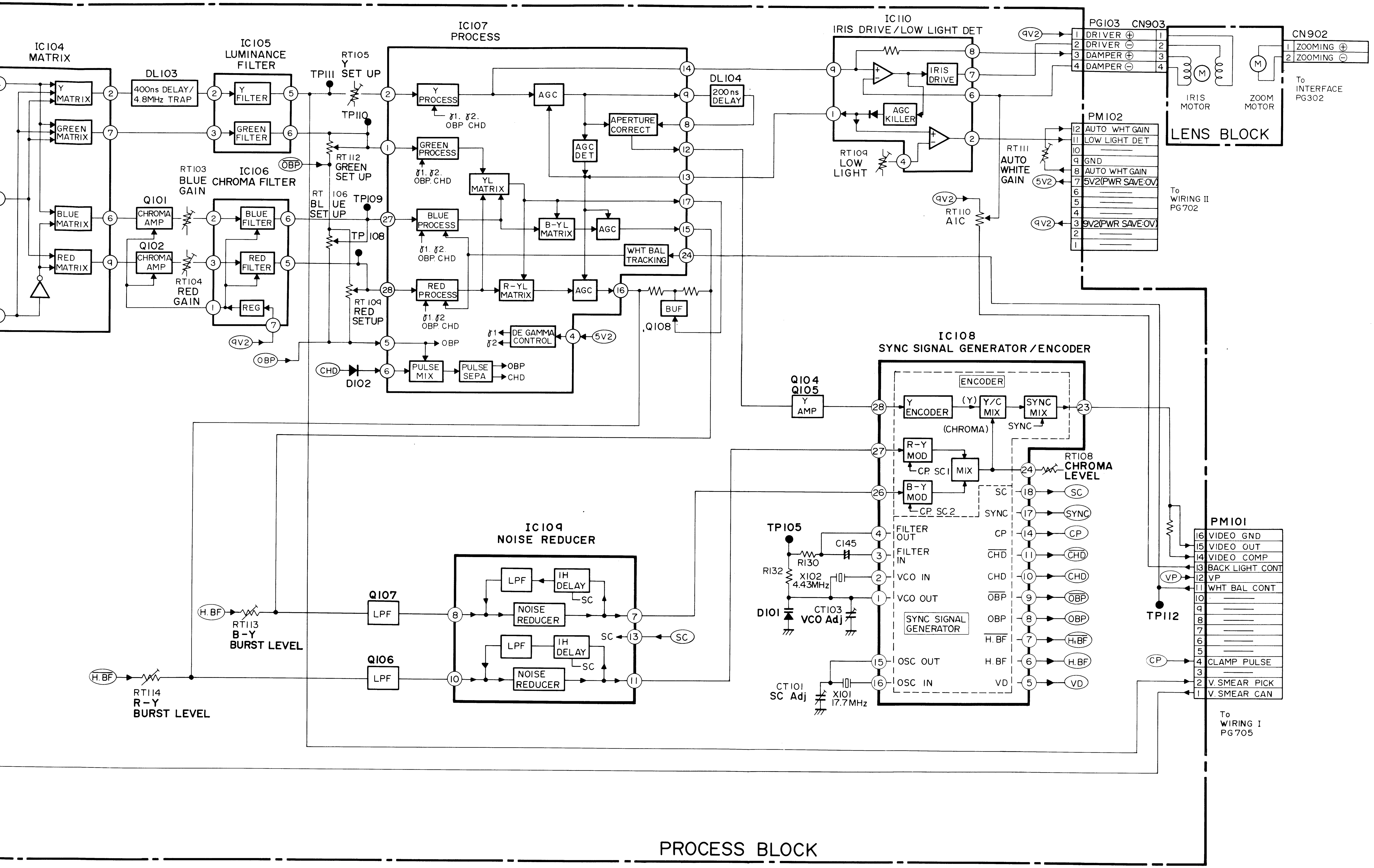

RT304
POWER
SUP.FREQ.
IC307
RT303
5V/9V Adj.
IC302
D307
IC308
IC305
IC306
IC304
IC301
IC309
IC303
13
1
RT301
AUTO
WHITE
OFFSET
PM301
14
10
2

Interface test points and controls (component side)

BLOCK DIAGRAMS

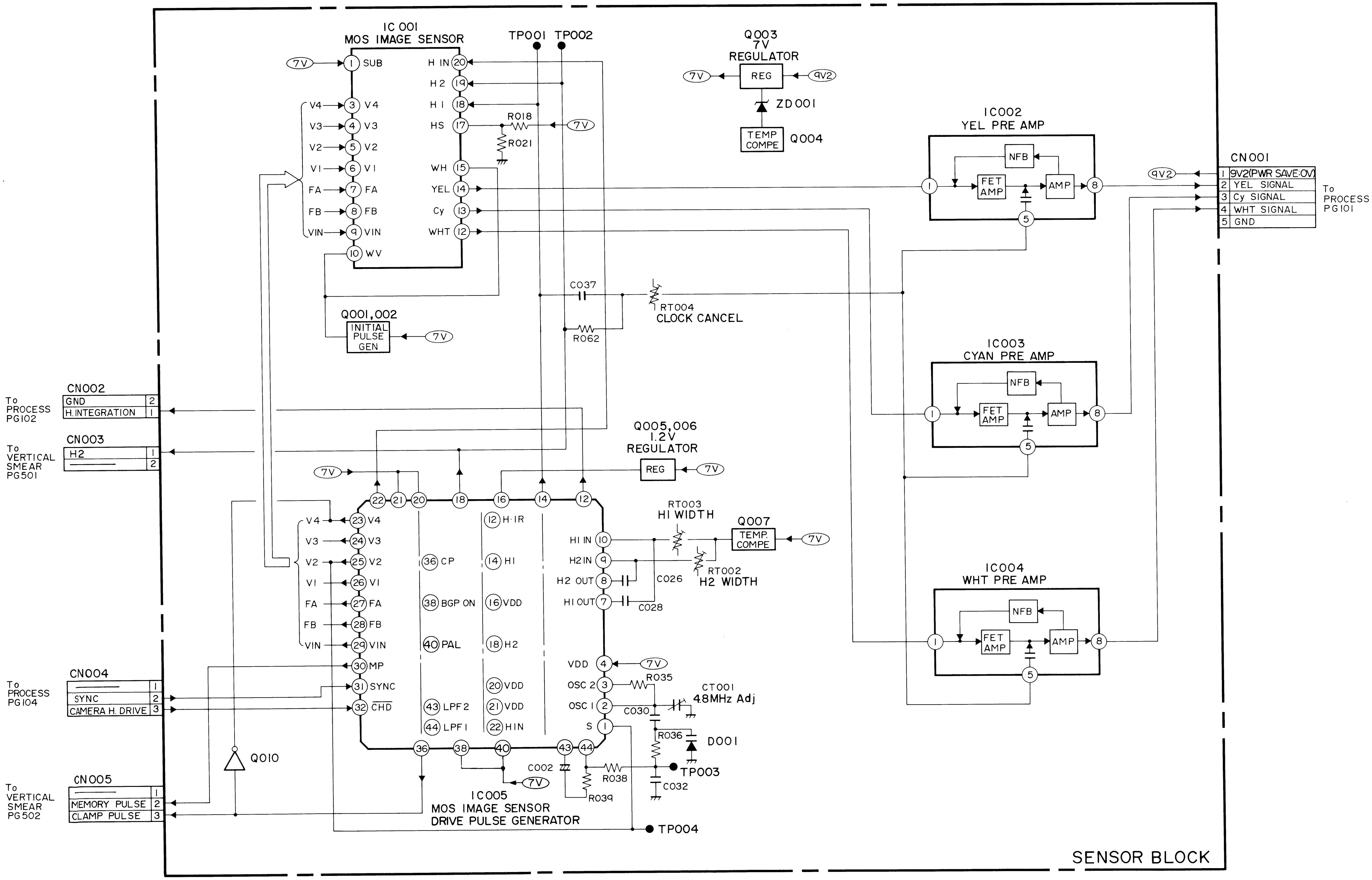
PROCESS BLOCK DIAGRAM

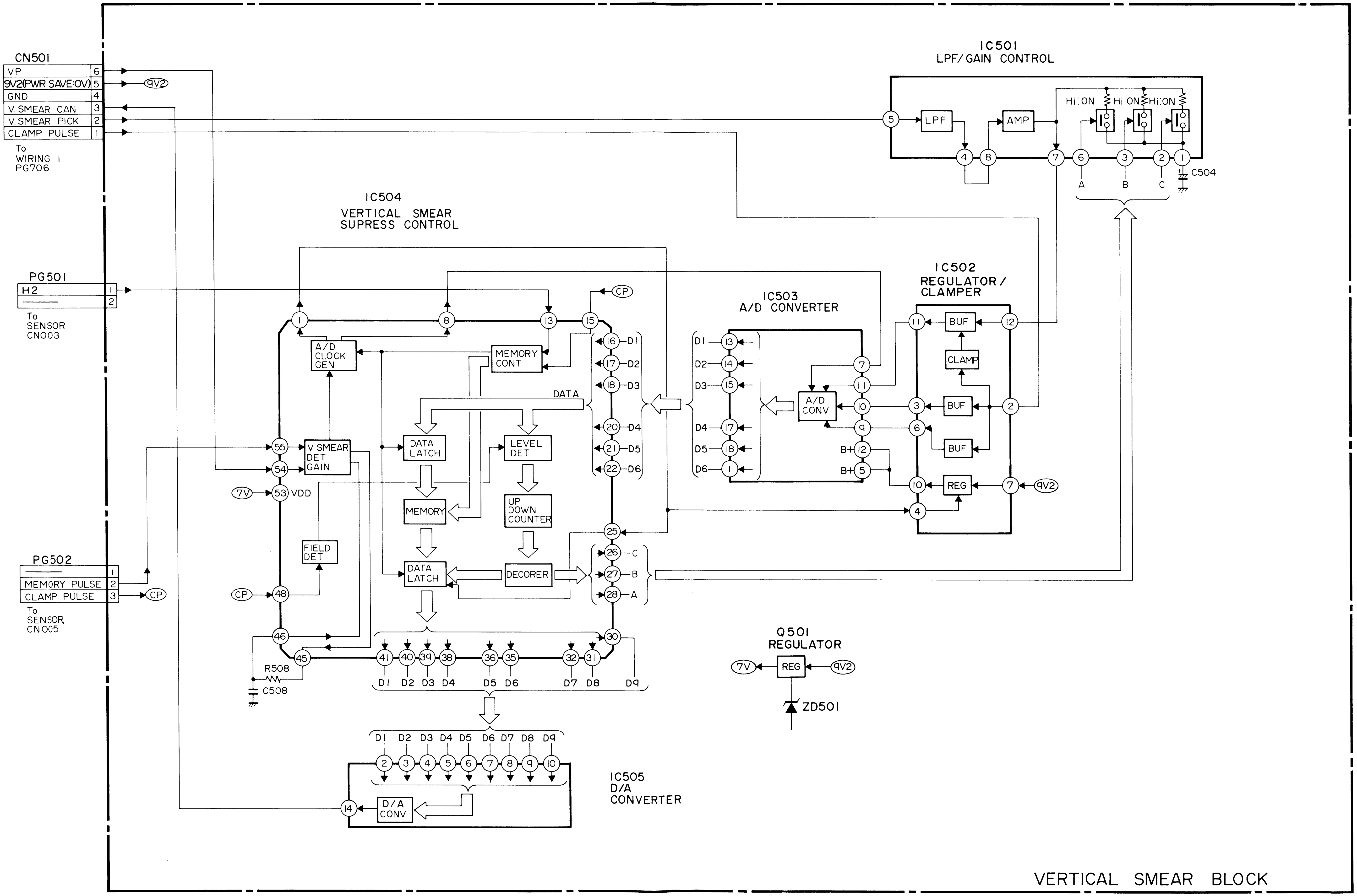

PG101
9V2(PWR SAVE:0V) 1
YEL SIGNAL 2
Cy SIGNAL 3
WHT SIGNAL 4
GND 5
To SENSOR CN001
9V2
IC102
YEL SIGNAL INTEGRATION
INTE-GRATION
AMP
AMP
DL102
140ns DELAY
RT101
YEL MATRIX
IC103
CYAN SIGNAL INTEGRATION
INTE-GRATION
AMP
AMP
RT102
CYAN MATRIX
IC101
WHT SIGNAL INTEGRATION
INTE-GRATION
AMP
DL101
70ns DELAY
CT102
H.TRANSINT
IC104
MATRIX
Y MATRIX
GREEN MATRIX
BLUE MATRIX
RED MATRIX
DL103
400ns DELAY/ 4.8MHz TRAP
IC105
LUMINANCE FILTER
Y FILTER
GREEN FILTER
RT103
BLUE GAIN
Q101
CHROMA AMP
Q102
CHROMA AMP
RT104
RED GAIN
IC106
CHROMA FILTER
BLUE FILTER
RED FILTER
REG
9V2
OBP
TP111
RT105
Y SET UP
TP110
RT112
GREEN SET UP
RT106
BLUE SET UP
TP109
TP108
RT109
RED SETUP
IC107
PROCESS
Y PROCESS
γ1. γ2. OBP CHD
GREEN PROCESS
γ1. γ2. OBP. CHD
YL MATRIX
BLUE PROCESS
γ1. γ2. OBP. CHD
RED PROCESS
γ1. γ2 OBP. CHD
AGC
AGC DET
APERTURE CORRECT
B-YL MATRIX
AGC
WHT BAL TRACKING
R-YL MATRIX
AGC
γ1
γ2
DE GAMMA CONTROL
5V2
OBP
PULSE MIX
PULSE SEPA
OBP
CHD
CHD
D102
DL104
200ns DELAY
BUF
Q108
Q104
Q105
Y AMP
PG102
H INTEGRATION 1
GND 2
To SENSOR CN002
PG104
CAMERA H.DRIVE 3
SYNC 2
1
To SENSOR CN004
TP107
CHD
SYNC
H.BF
RT113
B-Y BURST LEVEL
H.BF
RT114
R-Y BURST LEVEL
Q107
LPF
Q106
LPF
IC109
NOISE REDUCER
LPF
1H DELAY
SC
NOISE REDUCER
LPF
1H DELAY
SC
NOISE REDUCER
SC
SC
TP105
R130
R132
X102
4.43MHz
D101
CT101
SC Adj
PROCESS BLOCK


IC104
MATRIX
Y MATRIX
GREEN MATRIX
BLUE MATRIX
RED MATRIX
DL103
400ns DELAY/ 4.8MHz TRAP
IC105
LUMINANCE FILTER
Y FILTER
GREEN FILTER
RT103
BLUE GAIN
IC106
CHROMA FILTER
Q101
CHROMA AMP
Q102
CHROMA AMP
RT104
RED GAIN
BLUE FILTER
RED FILTER
REG
9V2
OBP
TP111
RT105
Y SET UP
TP110
RT112
GREEN SET UP
RT106
BLUE SET UP
TP109
TP108
RT109
RED SETUP
IC107
PROCESS
Y PROCESS
γ1. γ2. OBP CHD
GREEN PROCESS
BLUE PROCESS
RED PROCESS
YL MATRIX
B-YL MATRIX
R-YL MATRIX
AGC
AGC DET
APERTURE CORRECT
WHT BAL TRACKING
DE GAMMA CONTROL
γ1
γ2
5V2
PULSE MIX
PULSE SEPA
OBP
CHD
D102
BUF
Q108
DL104
200ns DELAY
IC110
IRIS DRIVE/LOW LIGHT DET
IRIS DRIVE
AGC KILLER
RT109
LOW LIGHT
RT111
AUTO WHITE GAIN
RT110
AIC
PG103
CN903
DRIVER ⊕
DRIVER ⊖
DAMPER ⊕
DAMPER ⊖
IRIS MOTOR
ZOOM MOTOR
CN902
ZOOMING ⊕
ZOOMING ⊖
To INTERFACE PG302
LENS BLOCK
PM102
AUTO WHT GAIN
LOW LIGHT DET
GND
AUTO WHT GAIN
5V2(PWR SAVE·OV)
9V2(PWR SAVE·OV)
To WIRING II PG702
IC108
SYNC SIGNAL GENERATOR/ENCODER
ENCODER
Y ENCODER
(Y)
Y/C MIX
SYNC MIX
(CHROMA)
SYNC
R-Y MOD
B-Y MOD
CP SC1
CP SC2
MIX
RT108
CHROMA LEVEL
Q104
Q105
Y AMP
TP105
C145
R130
R132
X102
4.43MHz
D101
CT103
VCO Adj
FILTER OUT
FILTER IN
VCO IN
VCO OUT
SYNC SIGNAL GENERATOR
OSC OUT
OSC IN
CT101
SC Adj
X101
17.7MHz
SC
SYNC
CP
CHD
CHD
OBP
OBP
H. BF
H. BF
VD
IC109
NOISE REDUCER
LPF
1H DELAY
NOISE REDUCER
Q107
LPF
Q106
LPF
H. BF
RT113
B-Y BURST LEVEL
H. BF
RT114
R-Y BURST LEVEL
PM101
VIDEO GND
VIDEO OUT
VIDEO COMP
BACK LIGHT CONT
VP
WHT BAL CONT
CLAMP PULSE
V. SMEAR PICK
V. SMEAR CAN
TP112
To WIRING I PG705

PROCESS BLOCK

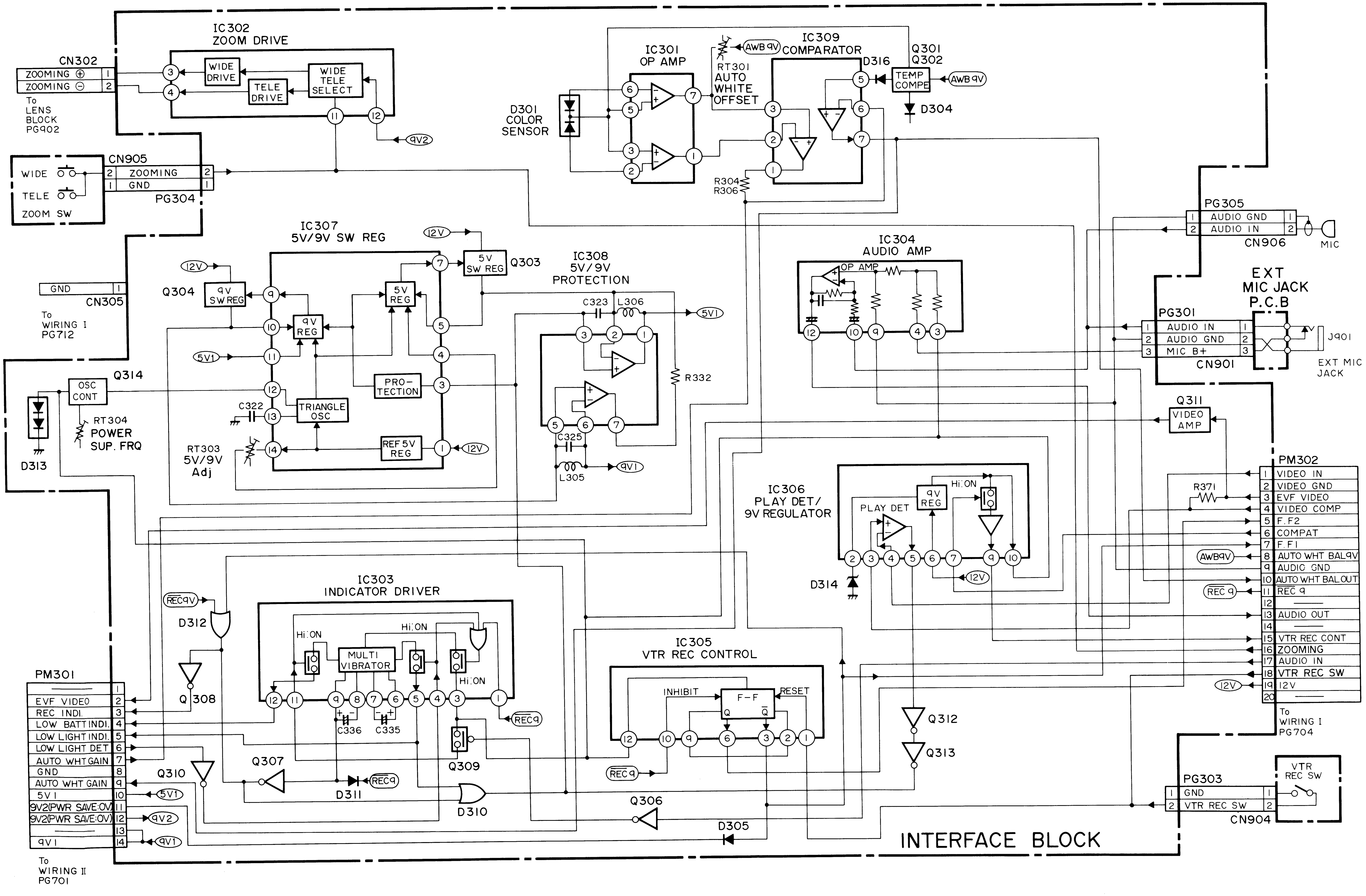
SENSOR BLOCK DIAGRAM


IC 001
MOS IMAGE SENSOR
SUB
H IN
H2
H1
HS
WH
YEL
Cy
WHT
WV
V4
V3
V2
V1
FA
FB
VIN
7V
TP001
TP002
R018
R021
Q003
7V
REGULATOR
REG
9V2
ZD001
TEMP COMPE
Q004
IC002
YEL PRE AMP
NFB
FET AMP
AMP
CN001
1 9V2(PWR SAVE:0V)
2 YEL SIGNAL
3 Cy SIGNAL
4 WHT SIGNAL
5 GND
To PROCESS PG101
C037
RT004
CLOCK CANCEL
R062
Q001,002
INITIAL PULSE GEN
IC003
CYAN PRE AMP
To PROCESS PG102
CN002
GND
H.INTEGRATION
To VERTICAL SMEAR PG501
CN003
H2
Q005,006
1.2V
REGULATOR
RT003
H1 WIDTH
Q007
TEMP. COMPE
H1 IN
H2 IN
H2 OUT
H1 OUT
C026
C028
RT002
H2 WIDTH
IC004
WHT PRE AMP
CP
BGP ON
PAL
LPF2
LPF1
H·IR
VDD
HIN
MP
SYNC
CHD
VDD
OSC 2
OSC 1
S
R035
CT001
4.8MHz Adj
C030
R036
D001
TP003
C032
C002
R038
R039
To PROCESS PG104
CN004
SYNC
CAMERA H. DRIVE
Q010
To VERTICAL SMEAR PG502
CN005
MEMORY PULSE
CLAMP PULSE
IC005
MOS IMAGE SENSOR
DRIVE PULSE GENERATOR
TP004
SENSOR BLOCK

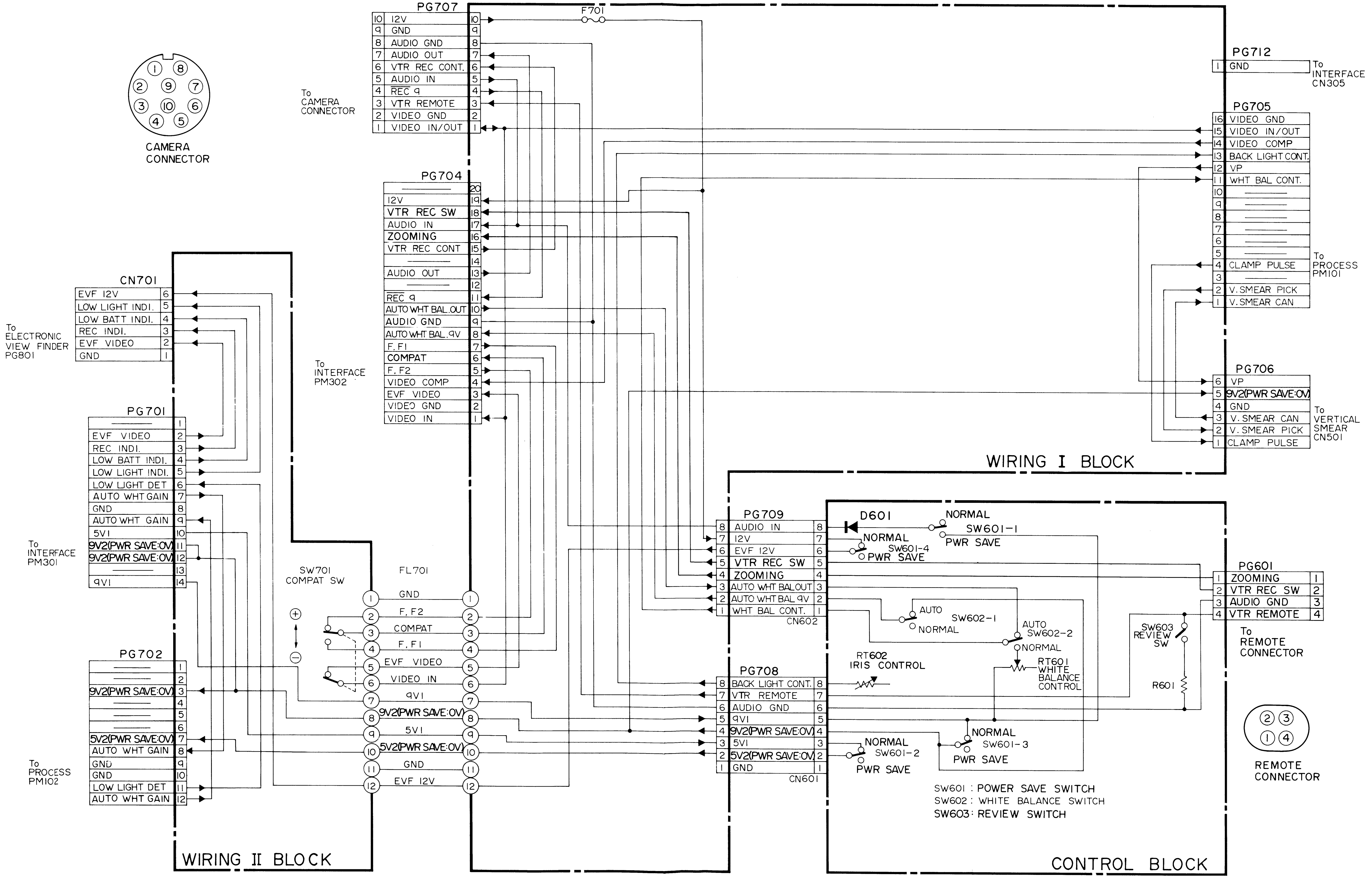

CN501
VP 6
9V2(PWR SAVE:0V) 5
GND 4
V.SMEAR CAN 3
V.SMEAR PICK 2
CLAMP PULSE 1
To WIRING 1 PG706
9V2
IC501
LPF/GAIN CONTROL
LPF
AMP
Hi:ON
Hi:ON
Hi:ON
5
4
8
7
6
3
2
1
A
B
C
C504
IC504
VERTICAL SMEAR SUPRESS CONTROL
PG501
H2 1
2
To SENSOR CN003
CP
A/D CLOCK GEN
MEMORY CONT
DATA
DATA LATCH
LEVEL DET
V SMEAR DET GAIN
MEMORY
UP DOWN COUNTER
FIELD DET
DATA LATCH
DECORER
1
8
13
15
16 D1
17 D2
18 D3
20 D4
21 D5
22 D6
25
26 C
27 B
28 A
30
55
54
53 VDD
7V
48
46
45
41 40 39 38 36 35 32 31
D1 D2 D3 D4 D5 D6 D7 D8 D9
R508
C508
PG502
1
MEMORY PULSE 2
CLAMP PULSE 3
To SENSOR CN005
CP
IC503
A/D CONVERTER
D1 13
D2 14
D3 15
D4 17
D5 18
D6 1
A/D CONV
7
11
10
9
B+ 12
B+ 5
IC502
REGULATOR/ CLAMPER
BUF
CLAMP
BUF
BUF
REG
11
12
3
2
6
10
7
4
9V2
Q501
REGULATOR
7V
REG
9V2
ZD501
IC505
D/A CONVERTER
D1 D2 D3 D4 D5 D6 D7 D8 D9
2 3 4 5 6 7 8 9 10
D/A CONV
14

VERTICAL SMEAR BLOCK

INTERFACE BLOCK DIAGRAM

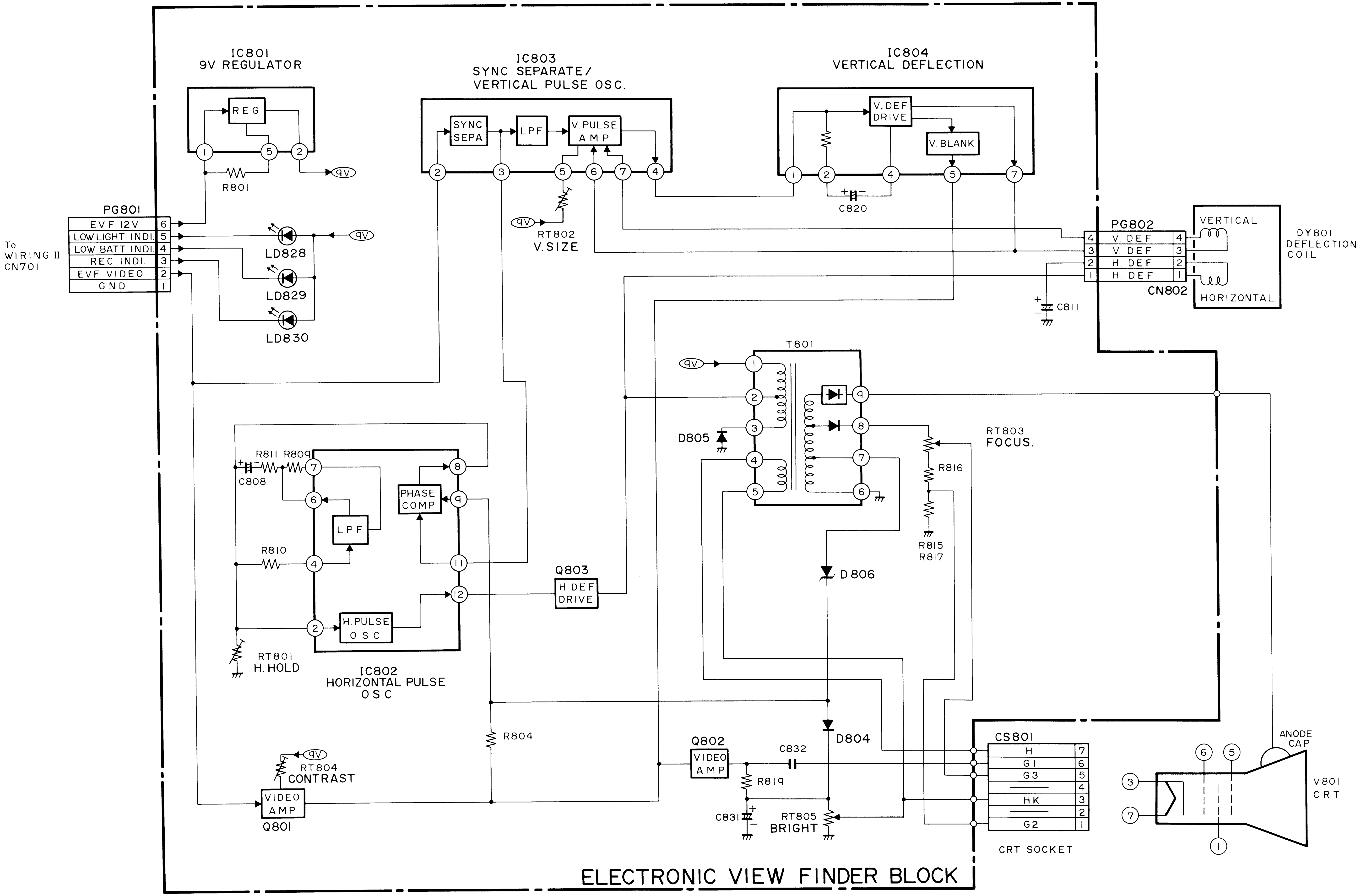

IC302
ZOOM DRIVE
WIDE DRIVE
TELE DRIVE
WIDE TELE SELECT
CN302
ZOOMING ⊕
ZOOMING ⊖
To LENS BLOCK PG902
9V2
CN905
WIDE
TELE
ZOOM SW
ZOOMING
GND
PG304
IC301
OP AMP
D301
COLOR SENSOR
RT301
AUTO WHITE OFFSET
AWB 9V
IC309
COMPARATOR
D316
Q301
Q302
TEMP COMPE
D304
R304
R306
PG305
AUDIO GND
AUDIO IN
CN906
MIC
IC307
5V/9V SW REG
12V
9V SW REG
Q304
9V REG
5V REG
5V SW REG
Q303
PRO-TECTION
TRIANGLE OSC
REF 5V REG
5V1
C322
RT303
5V/9V Adj
IC308
5V/9V PROTECTION
C323
L306
R332
C325
L305
9V1
GND
CN305
To WIRING I PG712
Q314
OSC CONT
RT304
POWER SUP. FRQ
D313
IC304
AUDIO AMP
OP AMP
EXT MIC JACK P.C.B
PG301
AUDIO IN
AUDIO GND
MIC B+
CN901
J901
EXT MIC JACK
Q311
VIDEO AMP
PM302
1 VIDEO IN
2 VIDEO GND
3 EVF VIDEO
4 VIDEO COMP
5 F.F2
6 COMPAT
7 F.F1
8 AUTO WHT BAL9V
9 AUDIO GND
10 AUTO WHT BAL OUT
11 REC 9
12 ———
13 AUDIO OUT
14 ———
15 VTR REC CONT
16 ZOOMING
17 AUDIO IN
18 VTR REC SW
19 12V
20 ———
R371
AWB9V
REC 9
To WIRING I PG704
IC306
PLAY DET/ 9V REGULATOR
PLAY DET
9V REG
Hi: ON
D314
IC303
INDICATOR DRIVER
MULTI VIBRATOR
Hi: ON
C336
C335
REC9V
D312
Q308
Q307
D311
Q309
D310
Q310
REC9
IC305
VTR REC CONTROL
INHIBIT
F-F
RESET
Q
Q̄
Q312
Q313
Q306
D305
PM301
1 ———
2 EVF VIDEO
3 REC INDI.
4 LOW BATT INDI.
5 LOW LIGHT INDI.
6 LOW LIGHT DET
7 AUTO WHT GAIN
8 GND
9 AUTO WHT GAIN
10 5V1
11 9V2(PWR SAVE:0V)
12 9V2(PWR SAVE:0V)
13 ———
14 9V1
To WIRING II PG701
PG303
GND
VTR REC SW
CN904
VTR REC SW
INTERFACE BLOCK

WIRING I/ WIRING II/ CONTROL BLOCK DIAGRAM

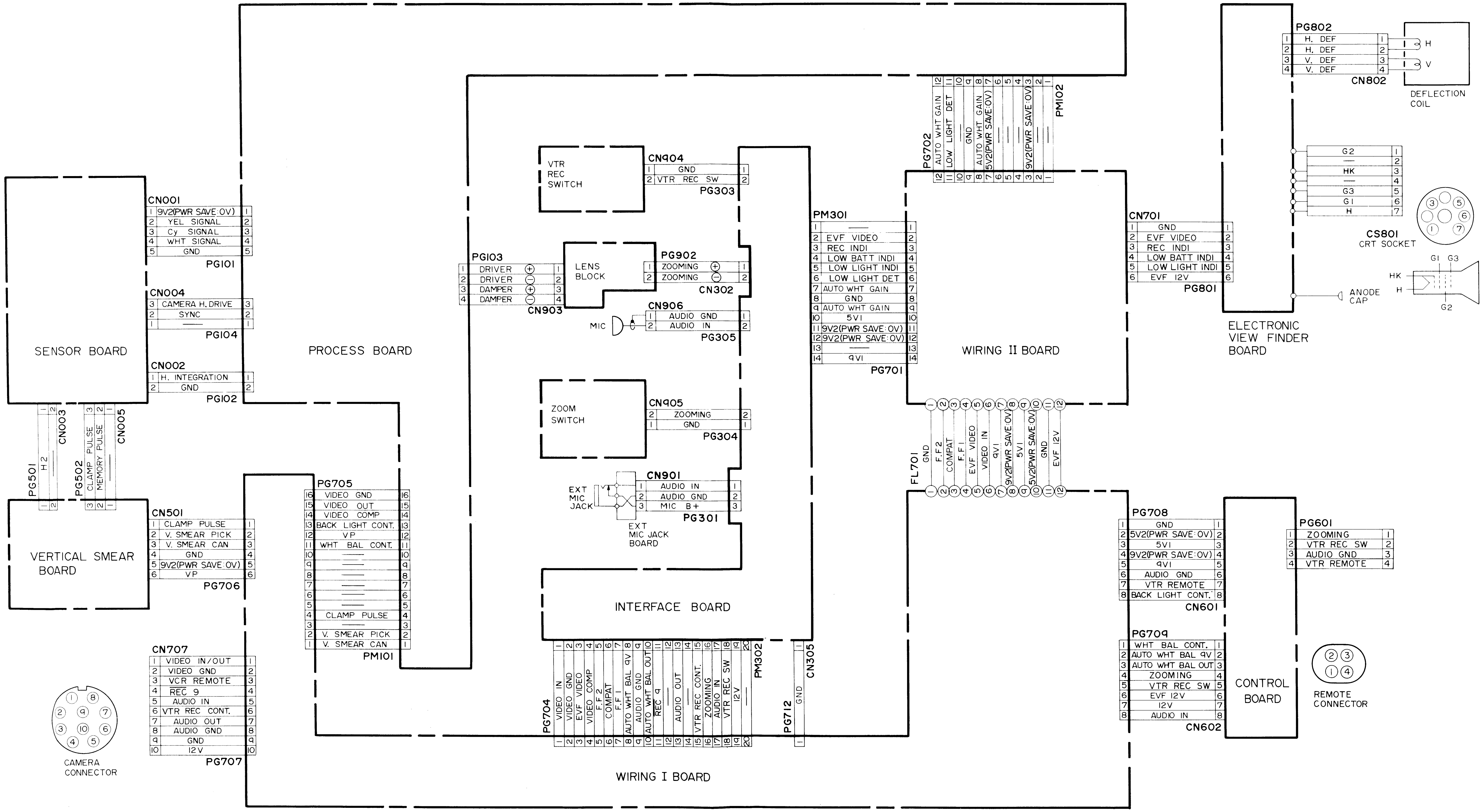


CAMERA CONNECTOR
PG707
10 12V
9 GND
8 AUDIO GND
7 AUDIO OUT
6 VTR REC CONT.
5 AUDIO IN
4 REC 9
3 VTR REMOTE
2 VIDEO GND
1 VIDEO IN/OUT
To CAMERA CONNECTOR
F701
PG712
1 GND
To INTERFACE CN305
PG705
16 VIDEO GND
15 VIDEO IN/OUT
14 VIDEO COMP
13 BACK LIGHT CONT.
12 VP
11 WHT BAL CONT.
4 CLAMP PULSE
2 V.SMEAR PICK
1 V.SMEAR CAN
To PROCESS PM101
PG704
19 12V
18 VTR REC SW
17 AUDIO IN
16 ZOOMING
15 VTR REC CONT
13 AUDIO OUT
11 REC 9
10 AUTO WHT BAL.OUT
9 AUDIO GND
8 AUTO WHT BAL.9V
7 F.F1
6 COMPAT
5 F.F2
4 VIDEO COMP
3 EVF VIDEO
2 VIDEO GND
1 VIDEO IN
To INTERFACE PM302
CN701
EVF 12V 6
LOW LIGHT INDI. 5
LOW BATT INDI. 4
REC INDI. 3
EVF VIDEO 2
GND 1
To ELECTRONIC VIEW FINDER PG801
PG701
EVF VIDEO 2
REC INDI. 3
LOW BATT INDI. 4
LOW LIGHT INDI. 5
LOW LIGHT DET 6
AUTO WHT GAIN 7
GND 8
AUTO WHT GAIN 9
5V1 10
9V2(PWR SAVE:0V) 11
9V2(PWR SAVE:0V) 12
9V1 14
To INTERFACE PM301
PG706
6 VP
5 9V2(PWR SAVE:0V)
4 GND
3 V.SMEAR CAN
2 V.SMEAR PICK
1 CLAMP PULSE
To VERTICAL SMEAR CN501
WIRING I BLOCK
SW701 COMPAT SW
FL701
1 GND
2 F.F2
3 COMPAT
4 F.F1
5 EVF VIDEO
6 VIDEO IN
7 9V1
8 9V2(PWR SAVE:0V)
9 5V1
10 5V2(PWR SAVE:0V)
11 GND
12 EVF 12V
PG702
9V2(PWR SAVE:0V) 3
5V2(PWR SAVE:0V) 7
AUTO WHT GAIN 8
GND 9
GND 10
LOW LIGHT DET 11
AUTO WHT GAIN 12
To PROCESS PM102
WIRING II BLOCK
PG709
8 AUDIO IN
7 12V
6 EVF 12V
5 VTR REC SW
4 ZOOMING
3 AUTO WHT BAL OUT
2 AUTO WHT BAL 9V
1 WHT BAL CONT.
CN602
D601
NORMAL
SW601-1
PWR SAVE
NORMAL
SW601-4
PWR SAVE
AUTO
SW602-1
NORMAL
AUTO
SW602-2
NORMAL
RT602 IRIS CONTROL
RT601 WHITE BALANCE CONTROL
SW603 REVIEW SW
R601
PG601
1 ZOOMING 1
2 VTR REC SW 2
3 AUDIO GND 3
4 VTR REMOTE 4
To REMOTE CONNECTOR
PG708
8 BACK LIGHT CONT.
7 VTR REMOTE
6 AUDIO GND
5 9V1
4 9V2(PWR SAVE:0V)
3 5V1
2 5V2(PWR SAVE:0V)
1 GND
CN601
NORMAL
SW601-2
PWR SAVE
NORMAL
SW601-3
PWR SAVE
SW601 : POWER SAVE SWITCH
SW602 : WHITE BALANCE SWITCH
SW603 : REVIEW SWITCH
REMOTE CONNECTOR
CONTROL BLOCK

ELECTRONIC VIEWFINDER BLOCK DIAGRAM


IC801
9V REGULATOR
REG
R801
9V
IC803
SYNC SEPARATE/
VERTICAL PULSE OSC.
SYNC SEPA
LPF
V.PULSE AMP
RT802
V.SIZE
IC804
VERTICAL DEFLECTION
V.DEF DRIVE
V.BLANK
C820
PG801
EVF 12V
LOW LIGHT INDI.
LOW BATT INDI.
REC INDI.
EVF VIDEO
GND
To
WIRING II
CN701
LD828
LD829
LD830
PG802
V. DEF
V. DEF
H. DEF
H. DEF
CN802
C811
VERTICAL
HORIZONTAL
DY801
DEFLECTION
COIL
T801
D805
RT803
FOCUS.
R816
R815
R817
D806
R811 R809
C808
PHASE COMP
LPF
R810
H.PULSE OSC
RT801
H.HOLD
IC802
HORIZONTAL PULSE
OSC
Q803
H.DEF DRIVE
R804
RT804
CONTRAST
VIDEO AMP
Q801
Q802
VIDEO AMP
C832
R819
C831
RT805
BRIGHT
D804
CS801
H
G1
G3
HK
G2
CRT SOCKET
ANODE CAP
V801
CRT
ELECTRONIC VIEW FINDER BLOCK

CIRCUIT BOARD CONNECTION DIAGRAM


SENSOR BOARD
CN001
1 9V2(PWR SAVE·OV) 1
2 YEL SIGNAL 2
3 Cy SIGNAL 3
4 WHT SIGNAL 4
5 GND 5
PG101
CN004
3 CAMERA H. DRIVE 3
2 SYNC 2
1 —— 1
PG104
CN002
1 H. INTEGRATION 1
2 GND 2
PG102
PG501
H2
——
CN003
PG502
CLAMP PULSE
MEMORY PULSE
——
CN005
VERTICAL SMEAR BOARD
CN501
1 CLAMP PULSE 1
2 V. SMEAR PICK 2
3 V. SMEAR CAN 3
4 GND 4
5 9V2(PWR SAVE·OV) 5
6 VP 6
PG706
CN707
1 VIDEO IN/OUT 1
2 VIDEO GND 2
3 VCR REMOTE 3
4 REC 9 4
5 AUDIO IN 5
6 VTR REC CONT. 6
7 AUDIO OUT 7
8 AUDIO GND 8
9 GND 9
10 12V 10
PG707
1 8 2 9 7 3 10 6 4 5
CAMERA CONNECTOR
PROCESS BOARD
PG705
16 VIDEO GND 16
15 VIDEO OUT 15
14 VIDEO COMP 14
13 BACK LIGHT CONT. 13
12 VP 12
11 WHT BAL CONT. 11
10 —— 10
9 —— 9
8 —— 8
7 —— 7
6 —— 6
5 —— 5
4 CLAMP PULSE 4
3 —— 3
2 V. SMEAR PICK 2
1 V. SMEAR CAN 1
PM101
PG103
1 DRIVER ⊕ 1
2 DRIVER ⊖ 2
3 DAMPER ⊕ 3
4 DAMPER ⊖ 4
CN903
LENS BLOCK
PG902
1 ZOOMING ⊕ 1
2 ZOOMING ⊖ 2
CN302
VTR REC SWITCH
CN904
1 GND 1
2 VTR REC SW 2
PG303
MIC
CN906
1 AUDIO GND 1
2 AUDIO IN 2
PG305
ZOOM SWITCH
CN905
2 ZOOMING 2
1 GND 1
PG304
EXT MIC JACK
CN901
1 AUDIO IN 1
2 AUDIO GND 2
3 MIC B+ 3
PG301
EXT MIC JACK BOARD
INTERFACE BOARD
PM301
1 —— 1
2 EVF VIDEO 2
3 REC INDI 3
4 LOW BATT INDI 4
5 LOW LIGHT INDI 5
6 LOW LIGHT DET 6
7 AUTO WHT GAIN 7
8 GND 8
9 AUTO WHT GAIN 9
10 5V1 10
11 9V2(PWR SAVE·OV) 11
12 9V2(PWR SAVE·OV) 12
13 —— 13
14 9V1 14
PG701
PG702
12 AUTO WHT GAIN 12
11 LOW LIGHT DET 11
10 —— 10
9 GND 9
8 AUTO WHT GAIN 8
7 5V2(PWR SAVE·OV) 7
6 —— 6
5 —— 5
4 —— 4
3 9V2(PWR SAVE·OV) 3
2 —— 2
1 —— 1
PM102
WIRING II BOARD
FL701
① GND
② F.F.2
③ COMPAT
④ F.F.1
⑤ EVF VIDEO
⑥ VIDEO IN
⑦ 9V1
⑧ 9V2(PWR SAVE·OV)
⑨ 5V1
⑩ 5V2(PWR SAVE·OV)
⑪ GND
⑫ EVF 12V
CN701
1 GND 1
2 EVF VIDEO 2
3 REC INDI 3
4 LOW BATT INDI 4
5 LOW LIGHT INDI 5
6 EVF 12V 6
PG801
ELECTRONIC VIEW FINDER BOARD
PG802
1 H. DEF 1
2 H. DEF 2
3 V. DEF 3
4 V. DEF 4
CN802
H
V
DEFLECTION COIL
1 G2
2 ——
3 HK
4 ——
5 G3
6 G1
7 H
CS801
CRT SOCKET
1 2 3 4 5 6 7
G1 G3
HK
H
G2
ANODE CAP
PG708
1 GND 1
2 5V2(PWR SAVE·OV) 2
3 5V1 3
4 9V2(PWR SAVE·OV) 4
5 9V1 5
6 AUDIO GND 6
7 VTR REMOTE 7
8 BACK LIGHT CONT. 8
CN601
PG709
1 WHT BAL CONT. 1
2 AUTO WHT BAL 9V 2
3 AUTO WHT BAL OUT 3
4 ZOOMING 4
5 VTR REC SW 5
6 EVF 12V 6
7 12V 7
8 AUDIO IN 8
CN602
CONTROL BOARD
PG601
1 ZOOMING 1
2 VTR REC SW 2
3 AUDIO GND 3
4 VTR REMOTE 4
② ③ ① ④
REMOTE CONNECTOR
PG704
1 VIDEO IN 1
2 VIDEO GND 2
3 EVF VIDEO 3
4 VIDEO COMP 4
5 F.F.2 5
6 COMPAT 6
7 F.F.1 7
8 AUTO WHT BAL 9V 8
9 AUDIO GND 9
10 AUTO WHT BAL OUT 10
11 REC 9 11
12 —— 12
13 AUDIO OUT 13
14 —— 14
15 VTR REC CONT. 15
16 ZOOMING 16
17 AUDIO IN 17
18 VTR REC SW 18
19 12V 19
20 —— 20
PM302
PG712
1 GND 1
CN305
WIRING I BOARD

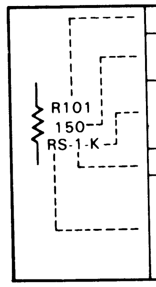
SCHEMATIC DIAGRAMS AND CIRCUIT BOARD DIAGRAMS

BEFORE USING THIS SERVICE MANUAL

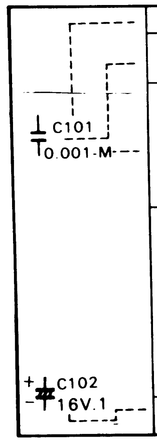
1. How to read abbreviations

Note

1. Voltage measured at base of chassis with minimum volume control and no signal.
2. Nomenclature of Resistors and Capacitors.



	Circuit No.
Value	No indicated Ω (Ohm) M : 1000kΩ
Tolerance	No indicated ± 5% K : ± 10% M : ± 20%
Wattage	No indicated ¼ W
Sort	No indicated Carbon film RC : Composition RW : Wire wound RS : Oxide metal film RN : Fixed metal film



	Circuit No.	
Value	No indicated μF P : PF	
Tolerance	No indicated ± 10% J : ± 5% M : ± 20% Z : + 80%, − 20% D : ± 0.5pF C : ± 0.25pF	
Sort	⊥⊤	Ceramic
	+ −	Electrolitic
	M	Mylar
	P	Polyester
	S	Styrol
Voltage	No indicated 50WV	

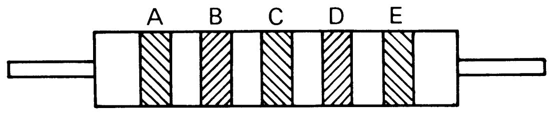
3. Be sure to make your orders of resistors and capacitors with value, voltage, tolerance and sort.

2. Cautions on use of MOS IC

1. The MOS IC is inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during their storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
2. High voltages may be applied during doldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
3. The human body, clothes made of synthetic fibres or nylon gloves may be charged with several thousands volts of static electricity because of friction, so a workers should be grounded.
4. Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

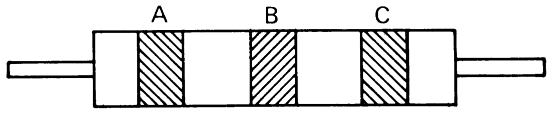
3. How to read capacity and inductance of resistor shape capacitors and coils

CAPACITOR



CAPACITY: (10A+B)xC [PF]
TOLERANCE: D
RATED VOLTAGE: BODY COLOR
Pink: 25V
Green: 50V
CHARACTERISTICS: E

COIL



INDUCTANCE: (10A+B)xC [μH]

COLOR	A, B	C	D	E
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6			
Violet	7			
Grey	8		±30%	High dielectric constant type
White	9			For temperature compensation
Gold		10^{-1}	± 5%	
Silver		10^{-2}	±10%	High dielectric constant type

SCHEMATIC DIAGRAMS AND CIRCUIT BOARD DIAGRAMS CONTENTS

SENSOR

SCHEMATIC 57
CIRCUIT BOARD 59
WAVEFORMS 61

WIRING I/ WIRING II/ CONTROL

SCHEMATIC 65

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CONTROL 69

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VERTICAL SMEAR

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CIRCUIT BOARD 93
WAVEFORMS 94

INTERFACE

SCHEMATIC 97

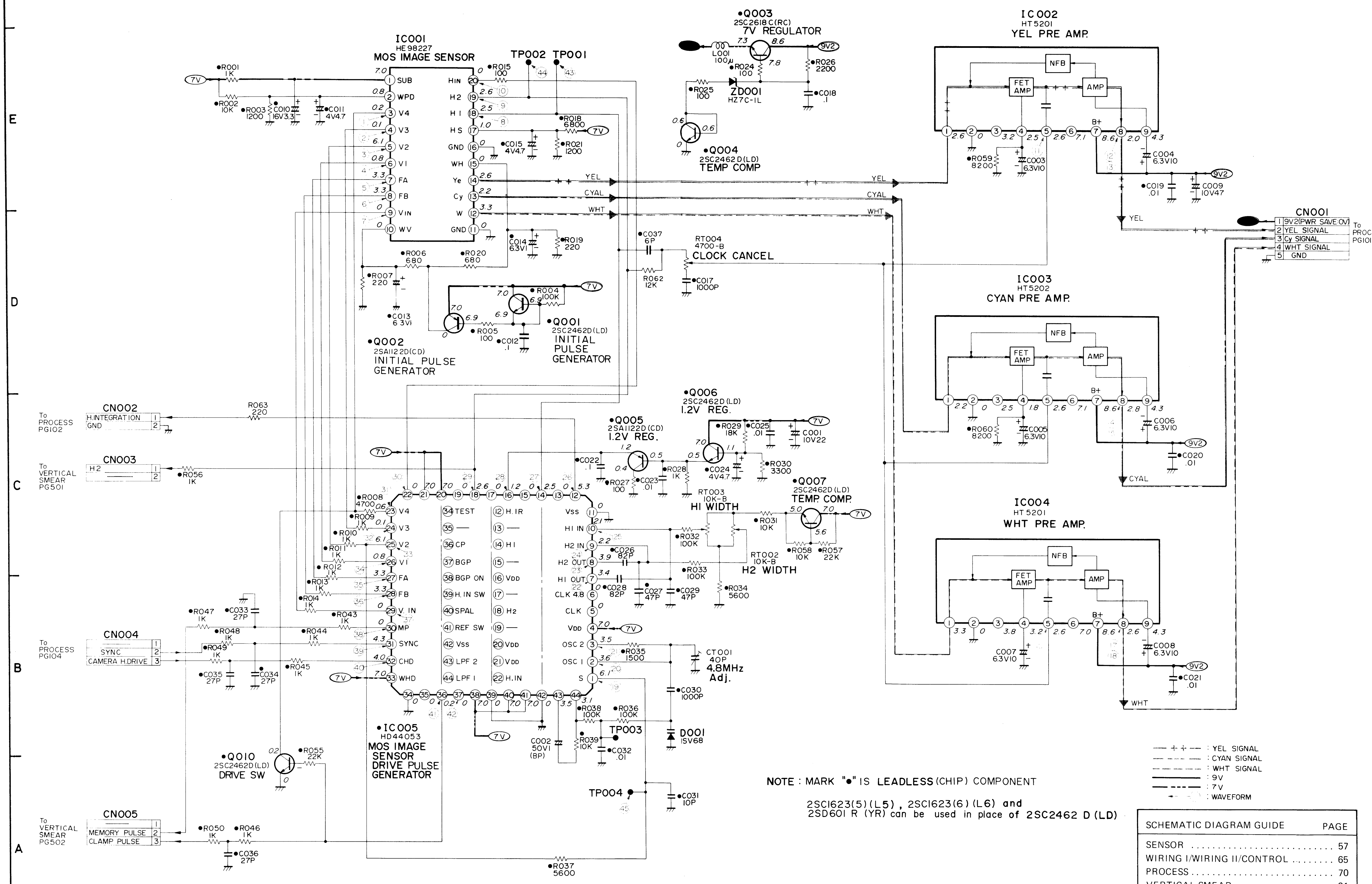
CIRCUIT BOARD

INTERFACE 99
EXT. MIC. JACK 101
WAVEFORMS 102

ELECTRONIC VIEWFINDER

SCHEMATIC 103
CIRCUIT BOARD 107
WAVEFORMS 105
EXPLODED VIEW 109
REPLACEMENT PARTS LIST 111

SENSOR SCHEMATIC DIAGRAM


IC001
HE98227
MOS IMAGE SENSOR
TP002 TP001
•Q003
2SC2618C(RC)
7V REGULATOR
L001 100μ
ZD001 HZ7C-IL
•Q004
2SC2462D(LD)
TEMP COMP
IC002
HT5201
YEL PRE AMP.
IC003
HT5202
CYAN PRE AMP.
IC004
HT5201
WHT PRE AMP.
NFB
FET AMP
AMP
CN001
9V2(PWR SAVE:0V)
YEL SIGNAL
Cy SIGNAL
WHT SIGNAL
GND
To PROCESS PG101
RT004 4700-B
CLOCK CANCEL
•Q002
2SA1122D(CD)
INITIAL PULSE GENERATOR
•Q001
2SC2462D(LD)
INITIAL PULSE GENERATOR
CN002
H.INTEGRATION
GND
To PROCESS PG102
CN003
H2
To VERTICAL SMEAR PG501
CN004
SYNC
CAMERA H.DRIVE
To PROCESS PG104
CN005
MEMORY PULSE
CLAMP PULSE
To VERTICAL SMEAR PG502
•Q005
2SA1122D(CD)
1.2V REG.
•Q006
2SC2462D(LD)
1.2V REG.
•Q007
2SC2462D(LD)
TEMP. COMP.
RT003 10K-B
H1 WIDTH
RT002 10K-B
H2 WIDTH
CT001 40P
4.8MHz Adj.
D001 1SV68
TP003
TP004
•IC005
HD44053
MOS IMAGE SENSOR DRIVE PULSE GENERATOR
•Q010
2SC2462D(LD)
DRIVE SW
YEL
CYAL
WHT
9V2
7V
—+·+— : YEL SIGNAL
—·—·— : CYAN SIGNAL
—··—··— : WHT SIGNAL
——— : 9V
——— : 7V
◄- - : WAVEFORM
1
2
3
4
5
6
7
8
E
D
C
B
A

NOTE : MARK "•" IS LEADLESS (CHIP) COMPONENT

2SC1623(5)(L5), 2SC1623(6)(L6) and 2SD601 R (YR) can be used in place of 2SC2462 D (LD)

SCHEMATIC DIAGRAM GUIDE	PAGE
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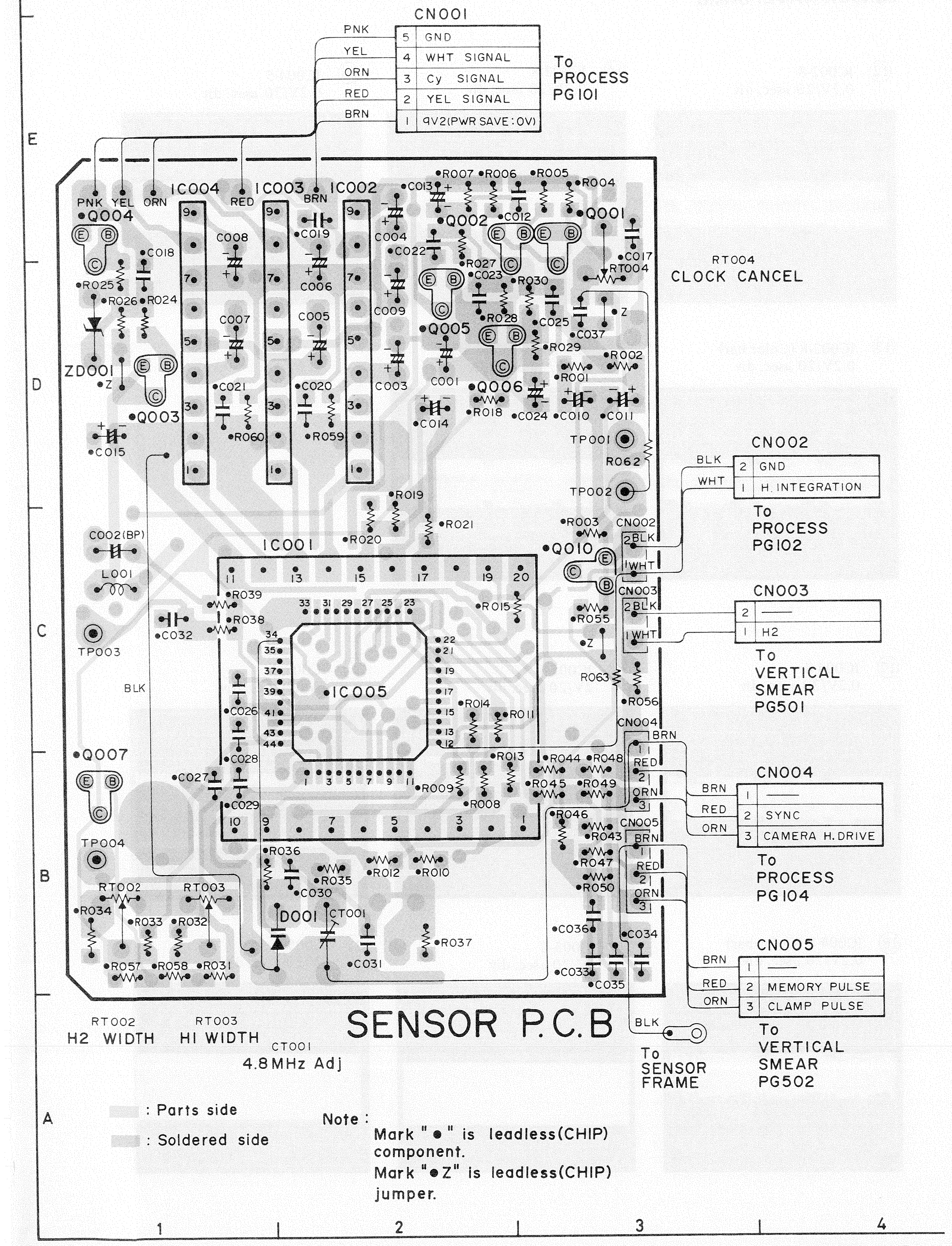
WIRING I/WIRING II/CONTROL	65
PROCESS	70
VERTICAL SMEAR	91
INTERFACE	97
ELECTRONIC VIEWFINDER	103

SENSOR CIRCUIT BOARD DIAGRAM


CN001
PNK 5 GND
YEL 4 WHT SIGNAL
ORN 3 Cy SIGNAL
RED 2 YEL SIGNAL
BRN 1 9V2(PWR SAVE:0V)
To PROCESS PG101
RT004 CLOCK CANCEL
IC004
IC003
IC002
IC001
IC005
Q001
Q002
Q003
Q004
Q005
Q006
Q007
Q010
ZD001
D001
CT001
L001
TP001
TP002
TP003
TP004
RT002
RT003
RT004
CN002
BLK 2 GND
WHT 1 H. INTEGRATION
To PROCESS PG102
CN003
2 ——
1 H2
To VERTICAL SMEAR PG501
CN004
BRN 1 ——
RED 2 SYNC
ORN 3 CAMERA H. DRIVE
To PROCESS PG104
CN005
BRN 1 ——
RED 2 MEMORY PULSE
ORN 3 CLAMP PULSE
To VERTICAL SMEAR PG502
BLK
To SENSOR FRAME
SENSOR P.C.B
RT002 H2 WIDTH
RT003 H1 WIDTH
CT001 4.8MHz Adj
E
D
C
B
A
1
2
3
4

: Parts side

: Soldered side

Note :
Mark "●" is leadless(CHIP) component.
Mark "●Z" is leadless(CHIP) jumper.

IC001

1	7.0
2	0.8
3	0.2
4	0.1
5	6.1
6	0.8
7	3.3
8	3.3
9	0
10	0

20	0
19	2.6
18	2.5
17	1.0
16	0
15	0
14	2.6
13	2.2
12	3.3
11	0

IC002

9	4.3
8	2.0
7	8.6
6	7.1
5	2.6
4	2.5
3	3.2
2	0
1	2.6

IC003

9	4.3
8	2.8
7	8.6
6	7.1
5	2.6
4	1.8
3	2.5
2	0
1	2.2

IC004

9	4.3
8	2.6
7	8.6
6	7.0
5	2.6
4	3.2
3	3.8
2	0
1	3.3

Q001

B	6.9
C	7.0
E	6.9

Q003

B	7.8
C	8.6
E	7.3

Q005

B	0.5
C	0.4
E	1.2

Q007

B	5.6
C	7.0
E	5.0

Q002

B	6.9
C	0
E	7.0

Q004

B	0.6
C	0.6
E	0

Q006

B	1.1
C	7.0
E	0.5

Q010

B	—
C	0.2
E	0

IC005

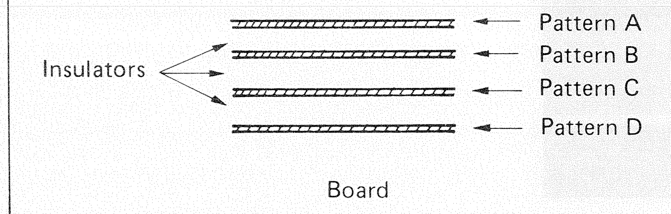
1	6.1
2	3.6
3	3.5
4	7.0
5	0
6	0
7	3.4
8	3.9
9	2.2
10	2.1
11	0

12	5.3
13	0
14	2.5
15	0
16	1.2
17	0
18	2.6
19	0
20	7.0
21	7.0
22	0

23	0.6
24	0.1
25	6.1
26	0.8
27	3.3
28	3.3
29	0
30	0
31	4.3
32	4.0
33	7.0

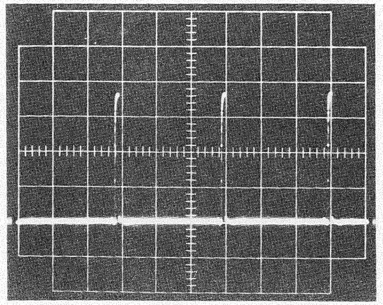
34	0
35	0
36	0.2
37	0
38	7.0
39	0
40	7.0
41	7.0
42	0
43	3.5
44	3.1

Note: The sensor circuit board has 4 layers of pattern as shown in the figure. The circuit board diagram described in this service manual is viewed from the leadless (chip) components side (soldered side), and patterns A and D are described.

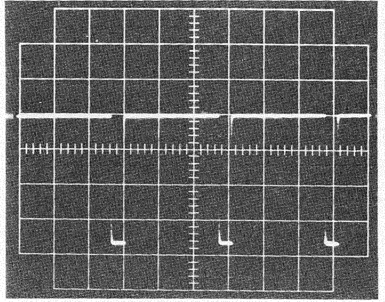

Insulators
Pattern A
Pattern B
Pattern C
Pattern D
Board

SENSOR WAVEFORMS

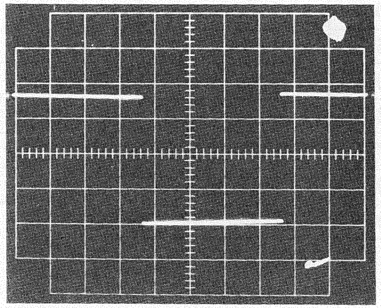
① IC001-3
2V/20 μsec. div



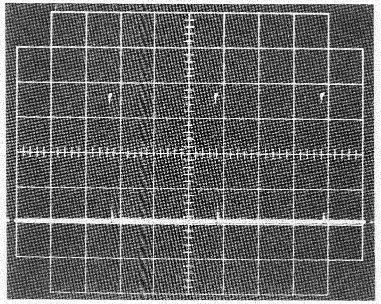
③ IC001-5
2V/20 μsec. div



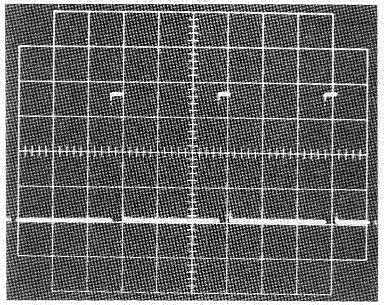
⑤ IC001-7
2V/5msec. div



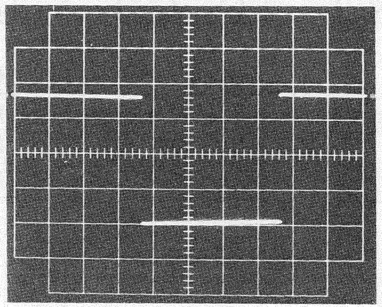
② IC001-4
2V/20 μsec. div



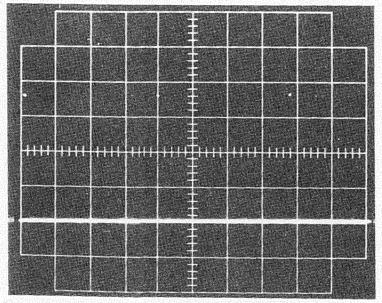
④ IC001-6
2V/20 μsec. div



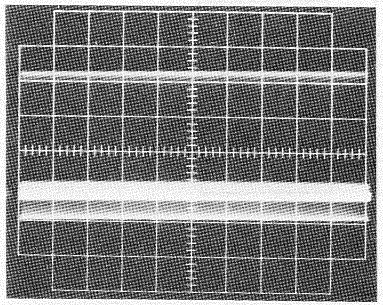
⑥ IC001-8
2V/5msec. div



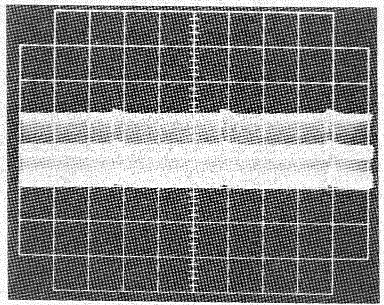
⑦ IC001-9
2V/5msec. div



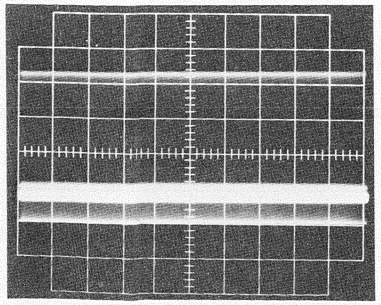
⑨ IC001-19
2V/20 μsec. div



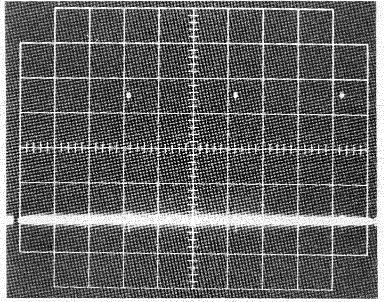
⑪ IC002-5
0.2V/20 μsec. div



⑧ IC001-18
2V/20 μsec. div

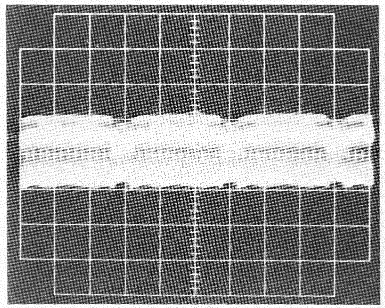


⑩ IC001-20
2V/20 μsec. div

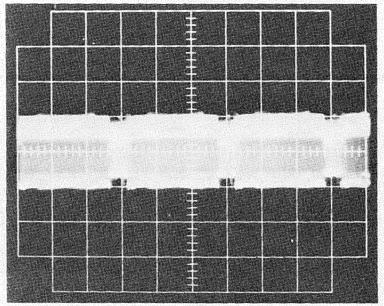


SENSOR WAVEFORMS

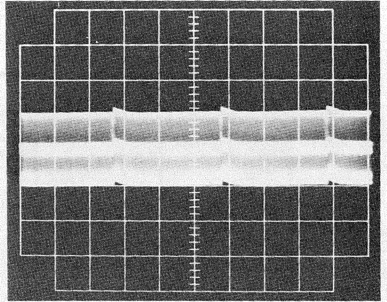
⑫ IC002-8
0.2V/20 μsec. div



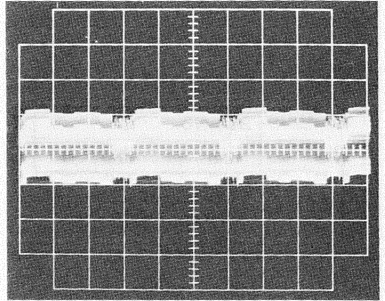
⑭ IC003-8
0.2V/20 μsec. div



⑯ IC004-5
0.2V/20 μsec. div



⑬ IC002-8 (Color bar)
0.2V/20 μsec. div



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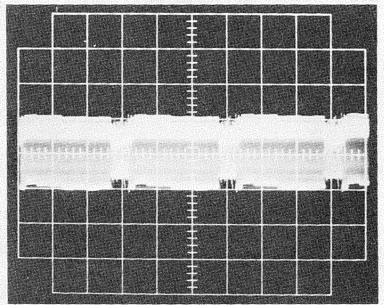

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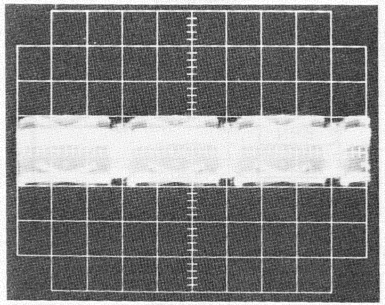
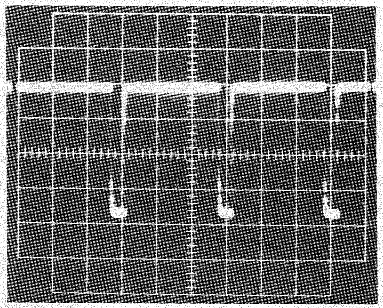
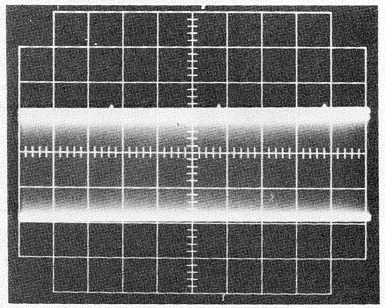
0.2V/20 μsec. div



⑲ IC005-1
2V/20 μsec. div



㉑ IC005-3
2V/20 μsec. div



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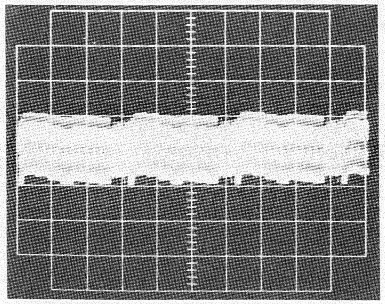
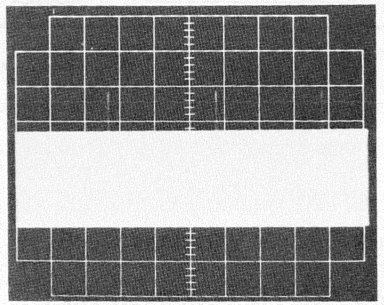
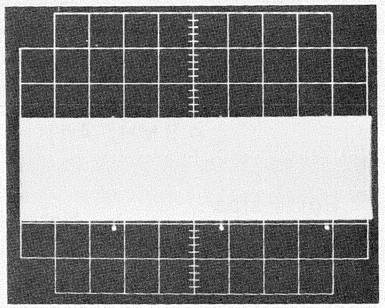


⑳ IC005-2
1V/20 μsec. div

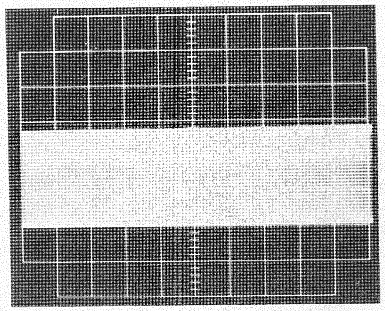


㉒ IC005-7
2V/20 μsec. div

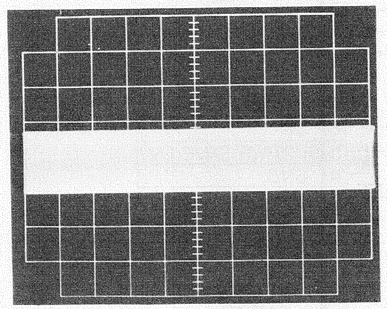


SENSOR WAVEFORMS

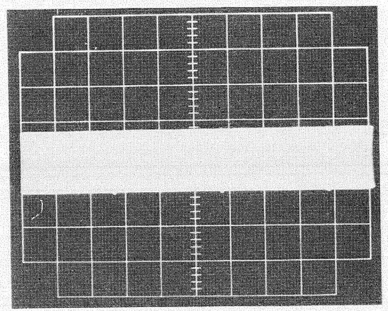
㉓ IC005-8
2V/20 μsec. div



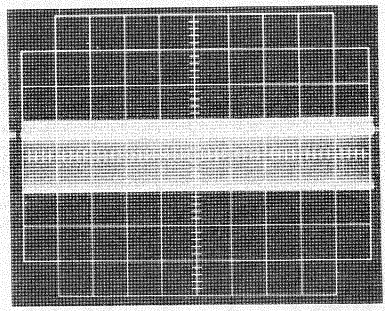
㉔ IC005-9
2V/20 μsec. div



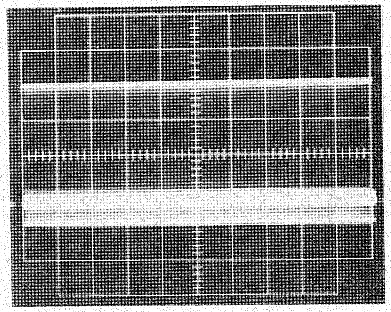
㉕ IC005-10
2V/20 μsec. div



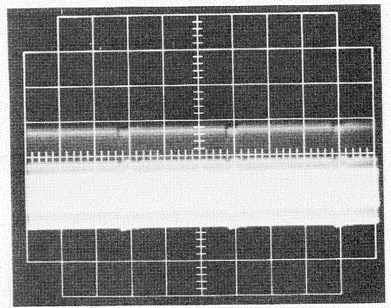
㉖ IC005-12
2V/20 μsec. div



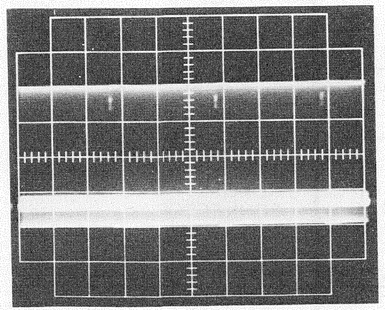
㉗ IC005-14
2V/20 μsec. div



㉘ IC005-16
50mV/20 μsec. div



㉙ IC005-18
2V/20 μsec. div



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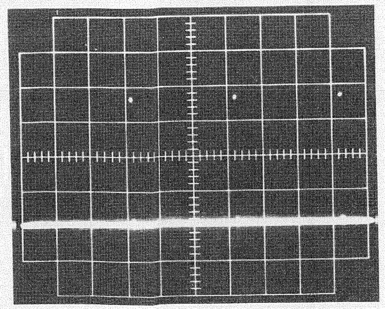
2V/20 μsec. div



㉛ IC005-23
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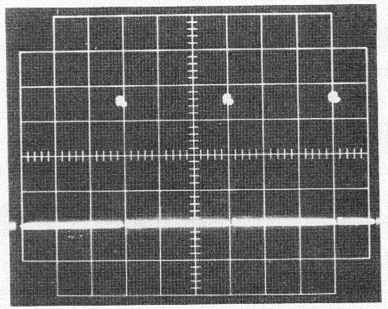

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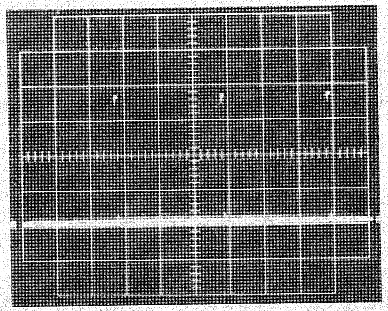
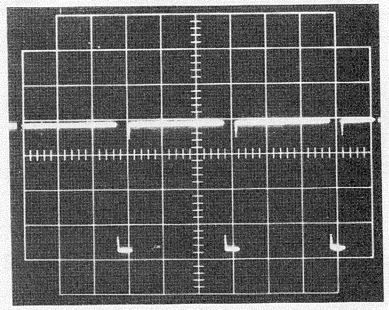
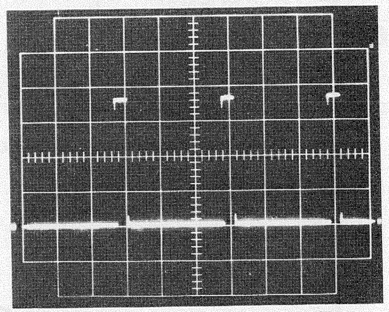


㉝ IC005-25
2V/20 μsec. div

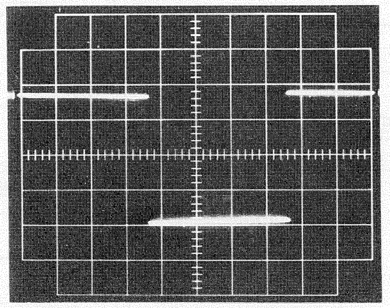


㉞ IC005-26
2V/20 μsec. div

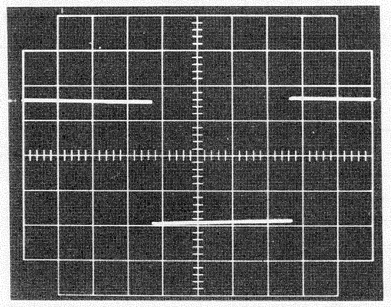


SENSOR WAVEFORMS

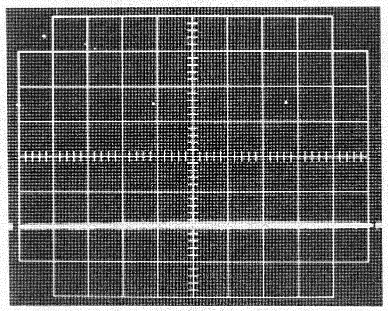
㉟ IC005-27
2V/5msec. div



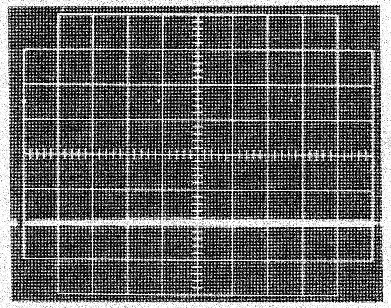
㊱ IC005-28
2V/5msec. div



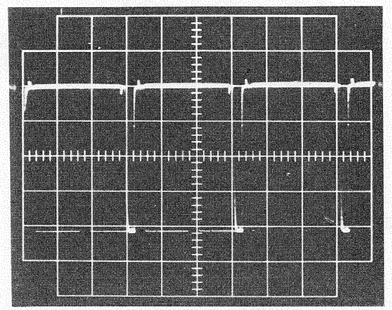
㊲ IC005-29
2V/5msec. div



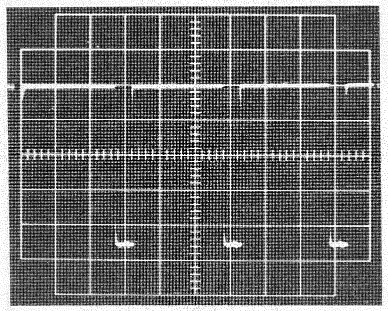
㊳ IC005-30
2V/5msec. div



㊴ IC005-31
1V/20 μsec. div



㊵ IC005-32
1V/20 μsec. div



㊶ IC005-36
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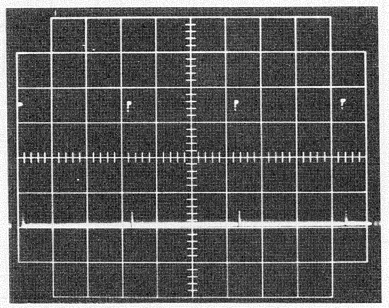
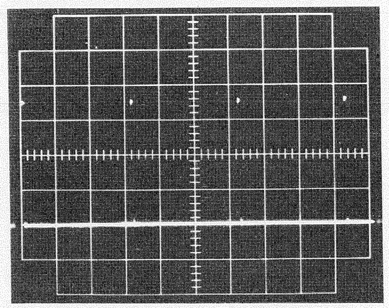
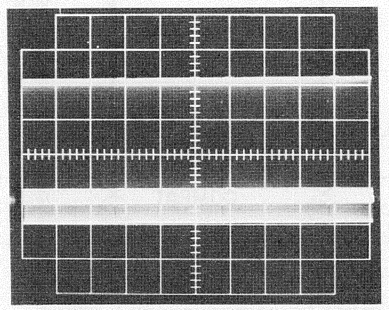


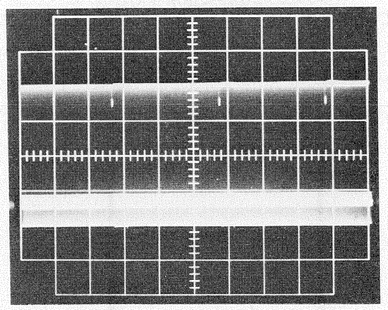
㊷ IC005-37
2V/20 μsec. div



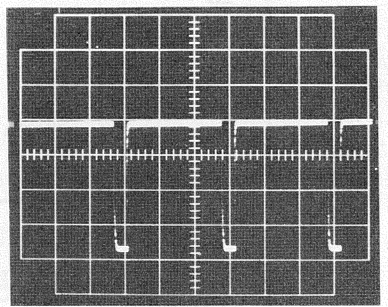
㊸ TP001
2V/20 μsec. div



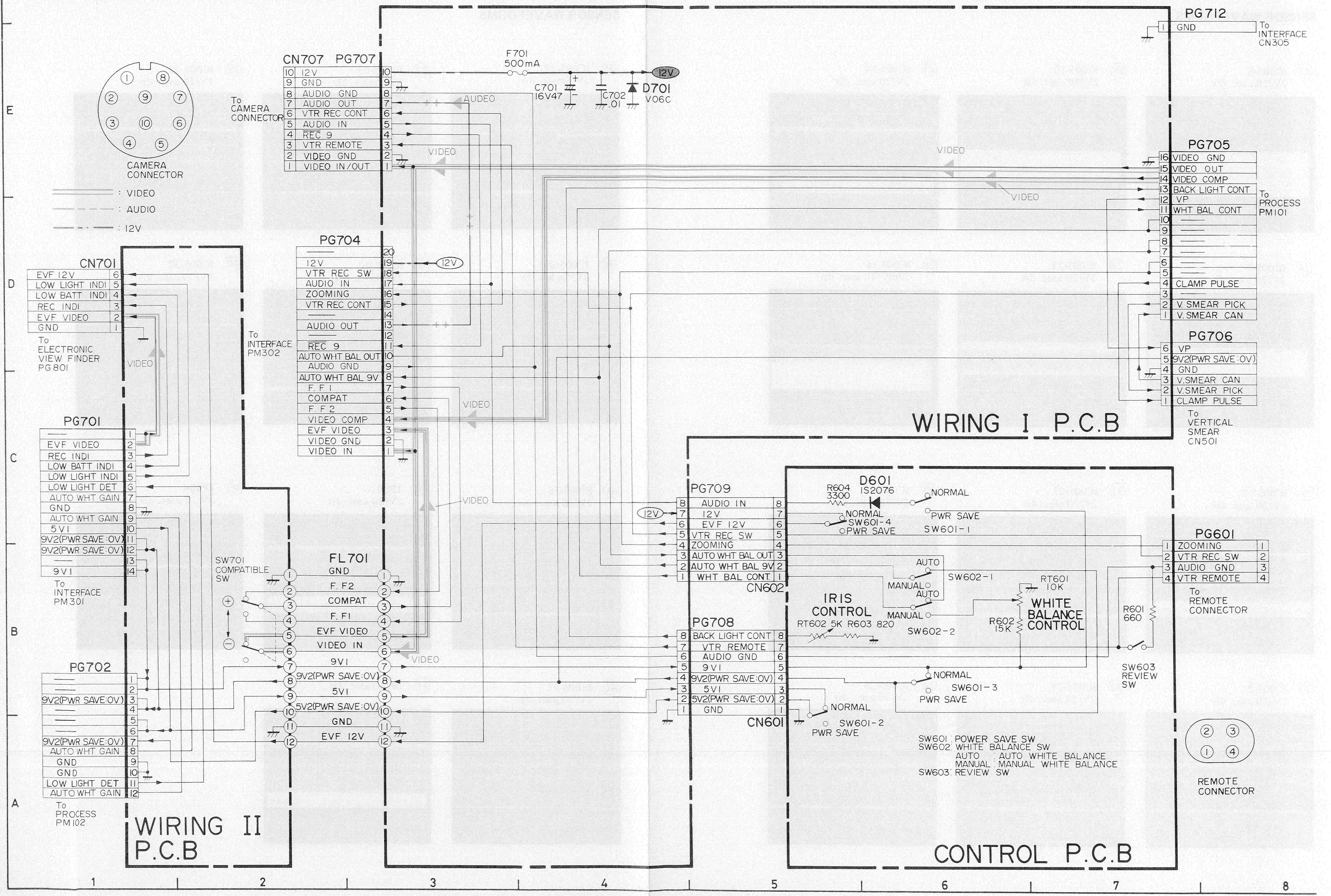
㊹ 2V/20 μsec. div



㊺ TP004
2V/20 μsec. div

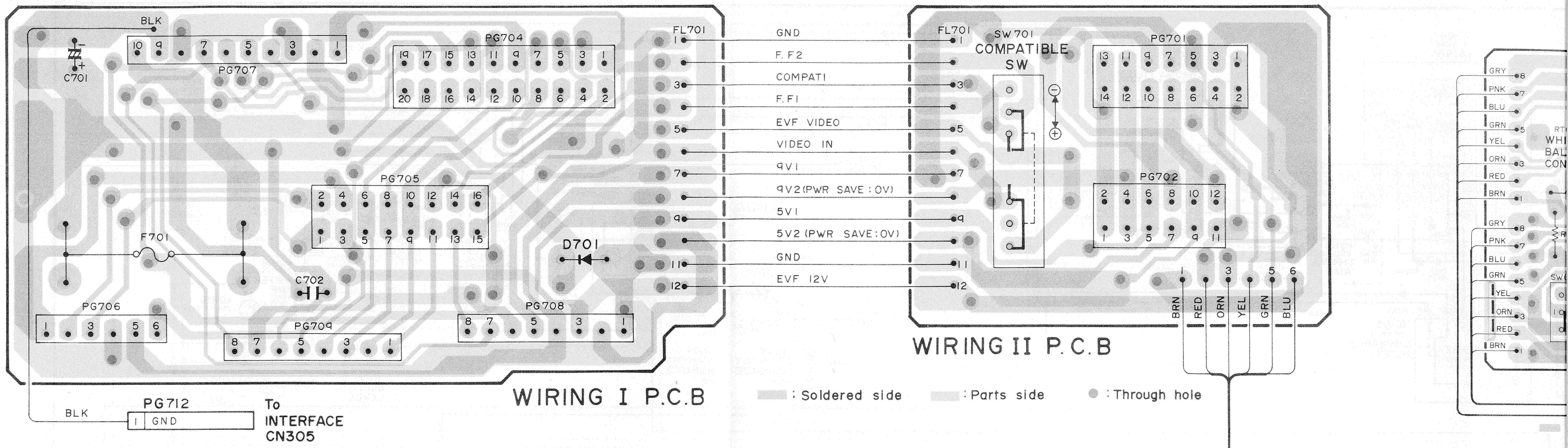


WIRING I/ WIRING II/ CONTROL SCHEMATIC DIAGRAM



CAMERA CONNECTOR
VIDEO
AUDIO
12V
CN707 PG707
10 12V
9 GND
8 AUDIO GND
7 AUDIO OUT
6 VTR REC CONT
5 AUDIO IN
4 REC 9
3 VTR REMOTE
2 VIDEO GND
1 VIDEO IN/OUT
To CAMERA CONNECTOR
F701 500mA
C701 16V47
C702 .01
D701 V06C
12V
AUDEO
VIDEO
PG712
1 GND
To INTERFACE CN305
PG705
16 VIDEO GND
15 VIDEO OUT
14 VIDEO COMP
13 BACK LIGHT CONT
12 VP
11 WHT BAL CONT
4 CLAMP PULSE
2 V.SMEAR PICK
1 V.SMEAR CAN
To PROCESS PM101
PG706
6 VP
5 9V2(PWR SAVE:OV)
4 GND
3 V.SMEAR CAN
2 V.SMEAR PICK
1 CLAMP PULSE
To VERTICAL SMEAR CN501
WIRING I P.C.B
CN701
6 EVF 12V
5 LOW LIGHT INDI
4 LOW BATT INDI
3 REC INDI
2 EVF VIDEO
1 GND
To ELECTRONIC VIEW FINDER PG801
PG704
19 12V
18 VTR REC SW
17 AUDIO IN
16 ZOOMING
15 VTR REC CONT
13 AUDIO OUT
11 REC 9
10 AUTO WHT BAL OUT
9 AUDIO GND
8 AUTO WHT BAL 9V
7 F.F1
6 COMPAT
5 F.F2
4 VIDEO COMP
3 EVF VIDEO
2 VIDEO GND
1 VIDEO IN
To INTERFACE PM302
PG701
2 EVF VIDEO
3 REC INDI
4 LOW BATT INDI
5 LOW LIGHT INDI
6 LOW LIGHT DET
7 AUTO WHT GAIN
8 GND
9 AUTO WHT GAIN
10 5V1
11 9V2(PWR SAVE:OV)
12 9V2(PWR SAVE:OV)
14 9V1
To INTERFACE PM301
SW701 COMPATIBLE SW
FL701
1 GND
2 F.F2
3 COMPAT
4 F.F1
5 EVF VIDEO
6 VIDEO IN
7 9V1
8 9V2(PWR SAVE:OV)
9 5V1
10 5V2(PWR SAVE:OV)
11 GND
12 EVF 12V
PG702
3 9V2(PWR SAVE:OV)
7 9V2(PWR SAVE:OV)
8 AUTO WHT GAIN
9 GND
10 GND
11 LOW LIGHT DET
12 AUTO WHT GAIN
To PROCESS PM102
WIRING II P.C.B
PG709
8 AUDIO IN
7 12V
6 EVF 12V
5 VTR REC SW
4 ZOOMING
3 AUTO WHT BAL OUT
2 AUTO WHT BAL 9V
1 WHT BAL CONT
CN602
PG708
8 BACK LIGHT CONT
7 VTR REMOTE
6 AUDIO GND
5 9V1
4 9V2(PWR SAVE:OV)
3 5V1
2 5V2(PWR SAVE:OV)
1 GND
CN601
R604 3300
D601 1S2076
NORMAL
PWR SAVE
SW601-1
SW601-4
SW602-1
AUTO
MANUAL
SW602-2
RT601 10K
R602 15K
WHITE BALANCE CONTROL
IRIS CONTROL
RT602 5K
R603 820
SW601-3
SW601-2
R601 660
SW603 REVIEW SW
PG601
1 ZOOMING
2 VTR REC SW
3 AUDIO GND
4 VTR REMOTE
To REMOTE CONNECTOR
REMOTE CONNECTOR
SW601: POWER SAVE SW
SW602: WHITE BALANCE SW
AUTO : AUTO WHITE BALANCE
MANUAL : MANUAL WHITE BALANCE
SW603: REVIEW SW
CONTROL P.C.B
A B C D E
1 2 3 4 5 6 7 8

WIRING I/ WIRING II/ CONTROL CIRCUIT BOARD DIAGRAM


BLK
C701
PG707
10 9 7 5 3 1
PG704
19 17 15 13 11 9 7 5 3 1
20 18 16 14 12 10 8 6 4 2
FL701
PG705
2 4 6 8 10 12 14 16
1 3 5 7 9 11 13 15
F701
D701
C702
PG706
1 3 5 6
PG709
8 7 5 3 1
PG708
8 7 5 3 1
WIRING I P.C.B
BLK
PG712
1 GND
To INTERFACE CN305
GND
F.F2
COMPATI
F.F1
EVF VIDEO
VIDEO IN
9V1
9V2 (PWR SAVE : 0V)
5V1
5V2 (PWR SAVE : 0V)
GND
EVF 12V
SW701
COMPATIBLE SW
PG701
13 11 9 7 5 3 1
14 12 10 8 6 4 2
PG702
2 4 6 8 10 12
1 3 5 7 9 11
BRN RED ORN YEL GRN BLU
WIRING II P.C.B
: Soldered side
: Parts side
● : Through hole
GRY PNK BLU GRN YEL ORN RED BRN

PG704

20	—
19	12V
18	VTR REC SW
17	AUDIO IN
16	ZOOMING
15	VTR REC CONT.
14	—
13	AUDIO OUT
12	—
11	$\overline{\mathrm{REC}}$ 9
10	AUTO WHT BAL OUT
9	AUDIO GND
8	AUTO WHT BAL 9V
7	F.F1
6	COMPAT
5	F.F2
4	VIDEO COMP
3	EVF VIDEO
2	VIDEO GND
1	VIDEO IN

To INTERFACE PM302

PG705

16	VIDEO GND
15	VIDEO OUT
14	VIDEO COMP
13	BACK LIGHT CONT.
12	VP
11	WHT BAL CONT.
10	—
9	—
8	—
7	—
6	—
5	—
4	CLAMP PULSE
3	—
2	V.SMEAR PICK
1	V.SMEAR CAN

To PROCESS PM101

PG706

6	VP
5	9V2 (PWR SAVE:0V)
4	GND
3	V.SMEAR CAN
2	V.SMEAR PICK
1	CLAMP PULSE

To VERTICAL SMEAR CN501

PG707

10	12V
9	GND
8	AUDIO GND
7	AUDIO OUT
6	VTR REC CONT.
5	AUDIO IN
4	$\overline{\mathrm{REC}}$ 9
3	VTR REMOTE
2	VIDEO GND
1	VIDEO IN/OUT

To CAMERA CONNECTOR VIA CN707

PG708

8	BACK LIGHT CONT.
7	VTR REMOTE
6	AUDIO GND
5	9V1
4	9V2 (PWR SAVE:0V)
3	5V1
2	5V2 (PWR SAVE:0V)
1	GND

To CONTROL CN601

PG709

8	AUDIO IN
7	12V
6	EVF 12V
5	VTR REC SW
4	ZOOMING
3	AUTO WHT BAL OUT
2	AUTO WHT BAL 9V
1	WHT BAL CONT.

To CONTROL CN602

PG701

1	—
2	EVF VIDEO
3	REC INDI.
4	LOW BATT INDI.
5	LOW LIGHT INDI.
6	LOW LIGHT DET
7	AUTO WHT GAIN
8	GND
9	AUTO WHT GAIN
10	5V1
11	9V2 (PWR SAVE:0V)
12	9V2 (PWR SAVE:0V)
13	—
14	9V1

To INTERFACE PM301

PG702

1	—
2	—
3	9V2 (PWR SAVE:0V)
4	—
5	—
6	—
7	5V2 (PWR SAVE:0V)
8	AUTO WHT GAIN
9	GND
10	GND
11	LOW LIGHT DET
12	AUTO WHT GAIN

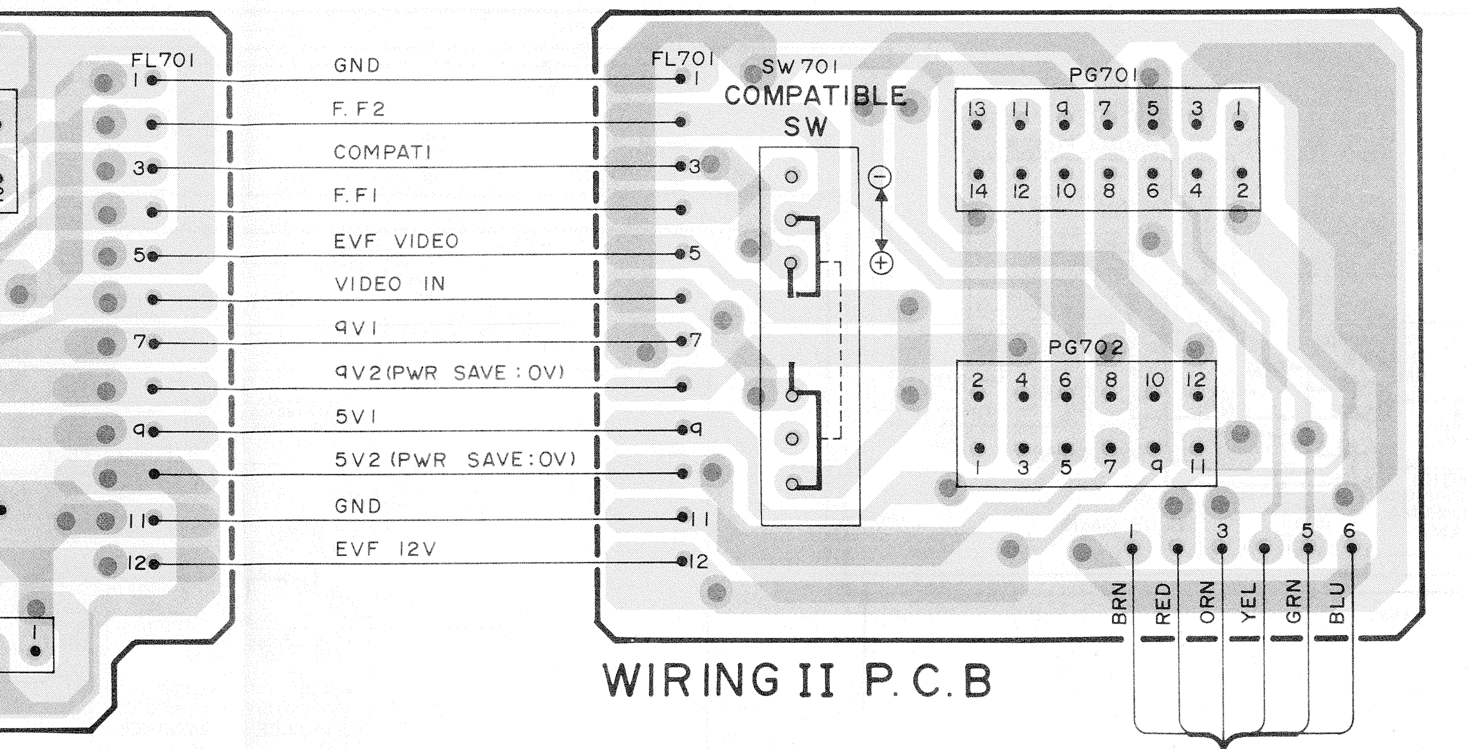
To PROCESS PM102

CN701

BLU	6	EVF 12V
GRN	5	LOW LIGHT INDI.
YEL	4	LOW BATT INDI.
ORN	3	REC INDI.
RED	2	EVF VIDEO
BRN	1	GND

To ELECTRONIC VIEWFINDER PG801

SCHEMATIC
SENSOR . .
WIRING I/W
PROCESS . .
VERTICAL .
INTERFACE
ELECTRON


FL701
1
3
5
7
9
11
12
GND
F.F2
COMPATI
F.FI
EVF VIDEO
VIDEO IN
9VI
9V2(PWR SAVE:OV)
5VI
5V2(PWR SAVE:OV)
GND
EVF 12V
FL701
SW701
COMPATIBLE SW
PG701
13 11 9 7 5 3 1
14 12 10 8 6 4 2
PG702
2 4 6 8 10 12
1 3 5 7 9 11
1 3 5 6
BRN
RED
ORN
YEL
GRN
BLU

WIRING II P.C.B

I P.C.B

▨ : Soldered side ▨ : Parts side ● : Through hole

	08
	LIGHT CONT.
	REMOTE
	D GND
	PWR SAVE:OV)
	WR SAVE:OV)

TROL
01

	09
	D IN
	12V
	REC SW
	ING
	WHT BAL OUT
	WHT BAL 9V
	BAL CONT.

TROL
02

PG701

1	———
2	EVF VIDEO
3	REC INDI.
4	LOW BATT INDI.
5	LOW LIGHT INDI.
6	LOW LIGHT DET
7	AUTO WHT GAIN
8	GND
9	AUTO WHT GAIN
10	5VI
11	9V2(PWR SAVE:OV)
12	9V2(PWR SAVE:OV)
13	———
14	9VI

To
INTERFACE
PM301

PG702

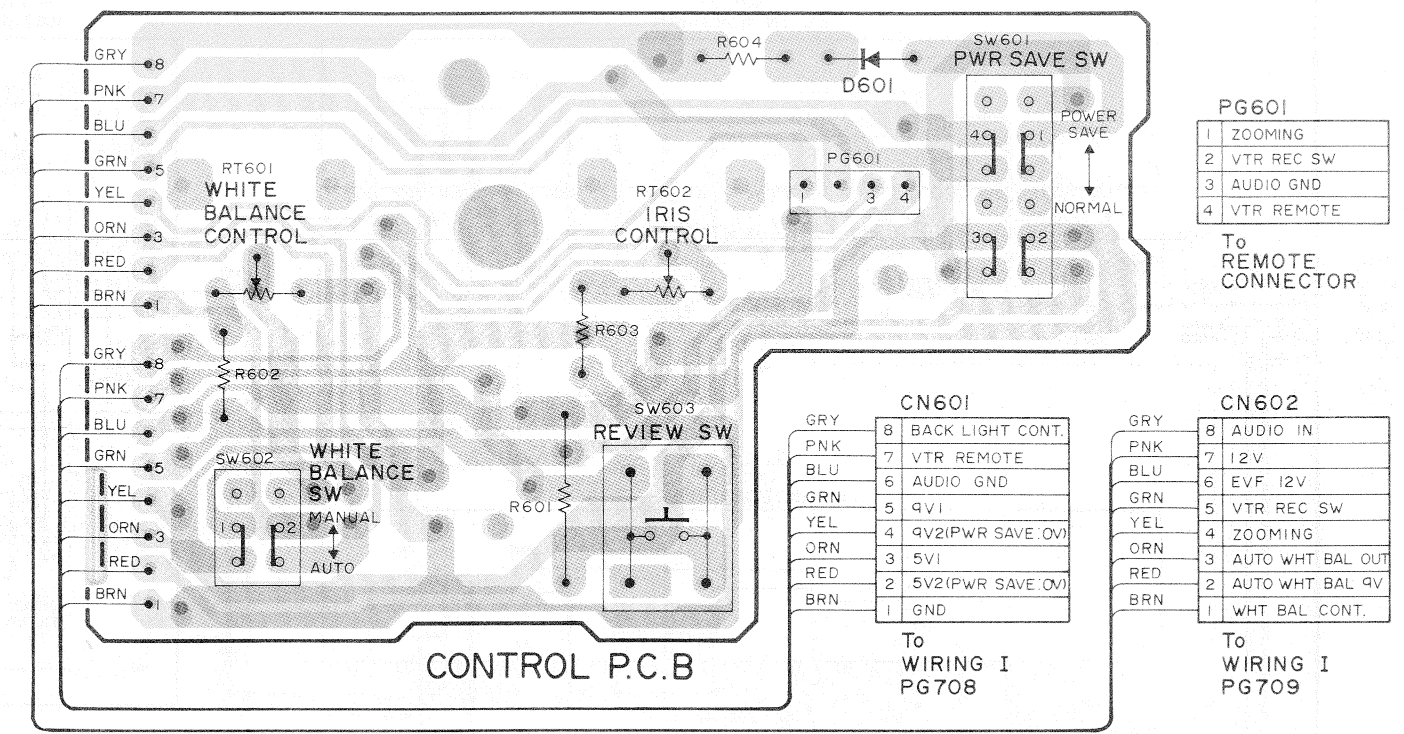
1	———
2	———
3	9V2(PWR SAVE:OV)
4	———
5	———
6	———
7	5V2(PWR SAVE:OV)
8	AUTO WHT GAIN
9	GND
10	GND
11	LOW LIGHT DET
12	AUTO WHT GAIN

To
PROCESS
PM102

CN701

BLU	6	EVF 12V
GRN	5	LOW LIGHT INDI.
YEL	4	LOW BATT INDI.
ORN	3	REC INDI.
RED	2	EVF VIDEO
BRN	1	GND

To
ELECTRONIC
VIEWFINDER
PG801


GRY
PNK
BLU
GRN
YEL
ORN
RED
BRN
8
7
5
3
1
R604
D601
SW601
PWR SAVE SW
POWER SAVE
NORMAL
PG601
1 3 4
RT601
WHITE BALANCE CONTROL
RT602
IRIS CONTROL
R603
R602
SW603
REVIEW SW
SW602
WHITE BALANCE SW
MANUAL
AUTO
R601

PG601

1	ZOOMING
2	VTR REC SW
3	AUDIO GND
4	VTR REMOTE

To
REMOTE
CONNECTOR

CN601

GRY	8	BACK LIGHT CONT.
PNK	7	VTR REMOTE
BLU	6	AUDIO GND
GRN	5	9VI
YEL	4	9V2(PWR SAVE:OV)
ORN	3	5VI
RED	2	5V2(PWR SAVE:OV)
BRN	1	GND

To
WIRING I
PG708

CN602

GRY	8	AUDIO IN
PNK	7	12V
BLU	6	EVF 12V
GRN	5	VTR REC SW
YEL	4	ZOOMING
ORN	3	AUTO WHT BAL OUT
RED	2	AUTO WHT BAL 9V
BRN	1	WHT BAL CONT.

To
WIRING I
PG709

CONTROL P.C.B

▨ :Soldered Side ▨ :Parts Side ● :Through hole

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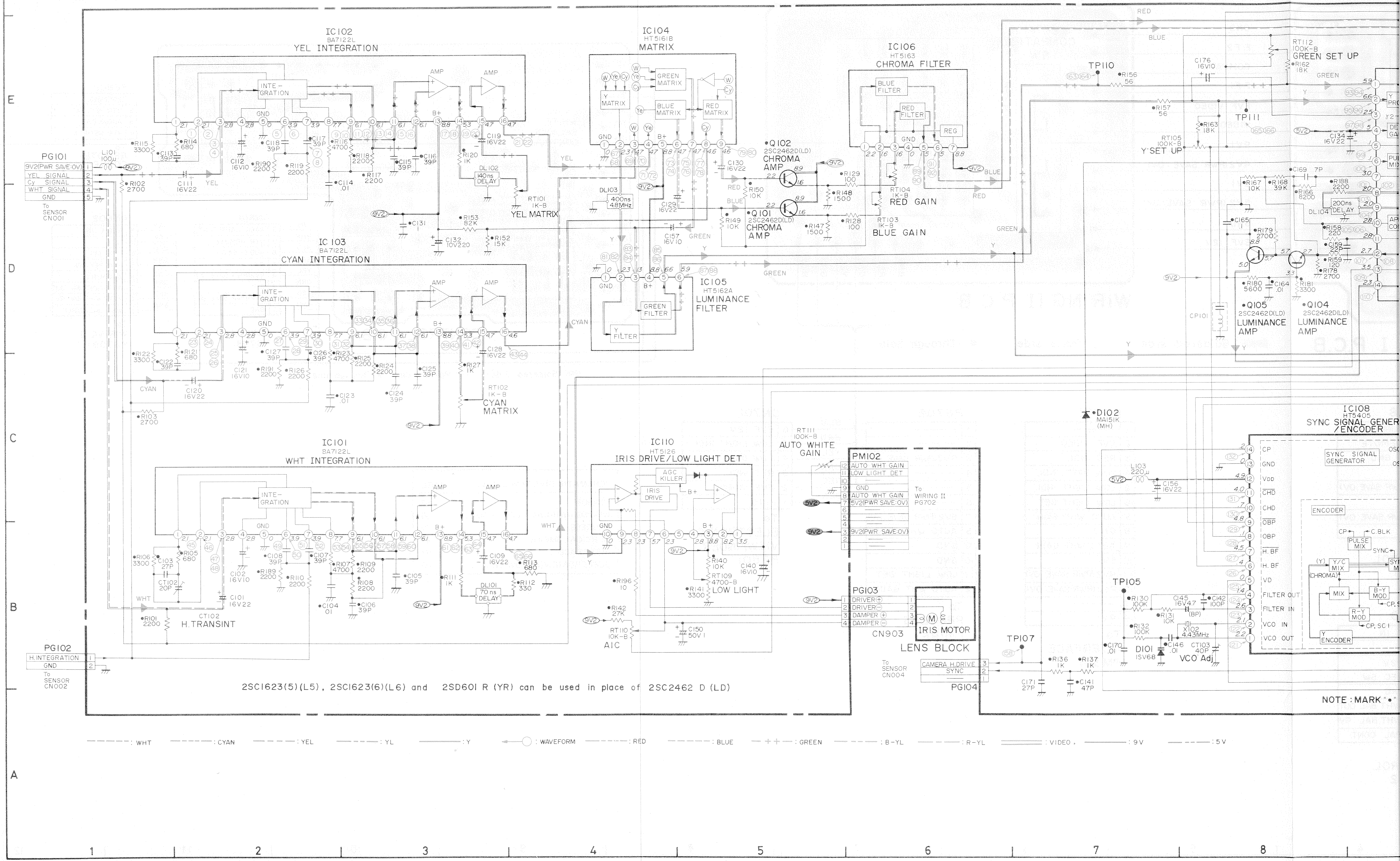
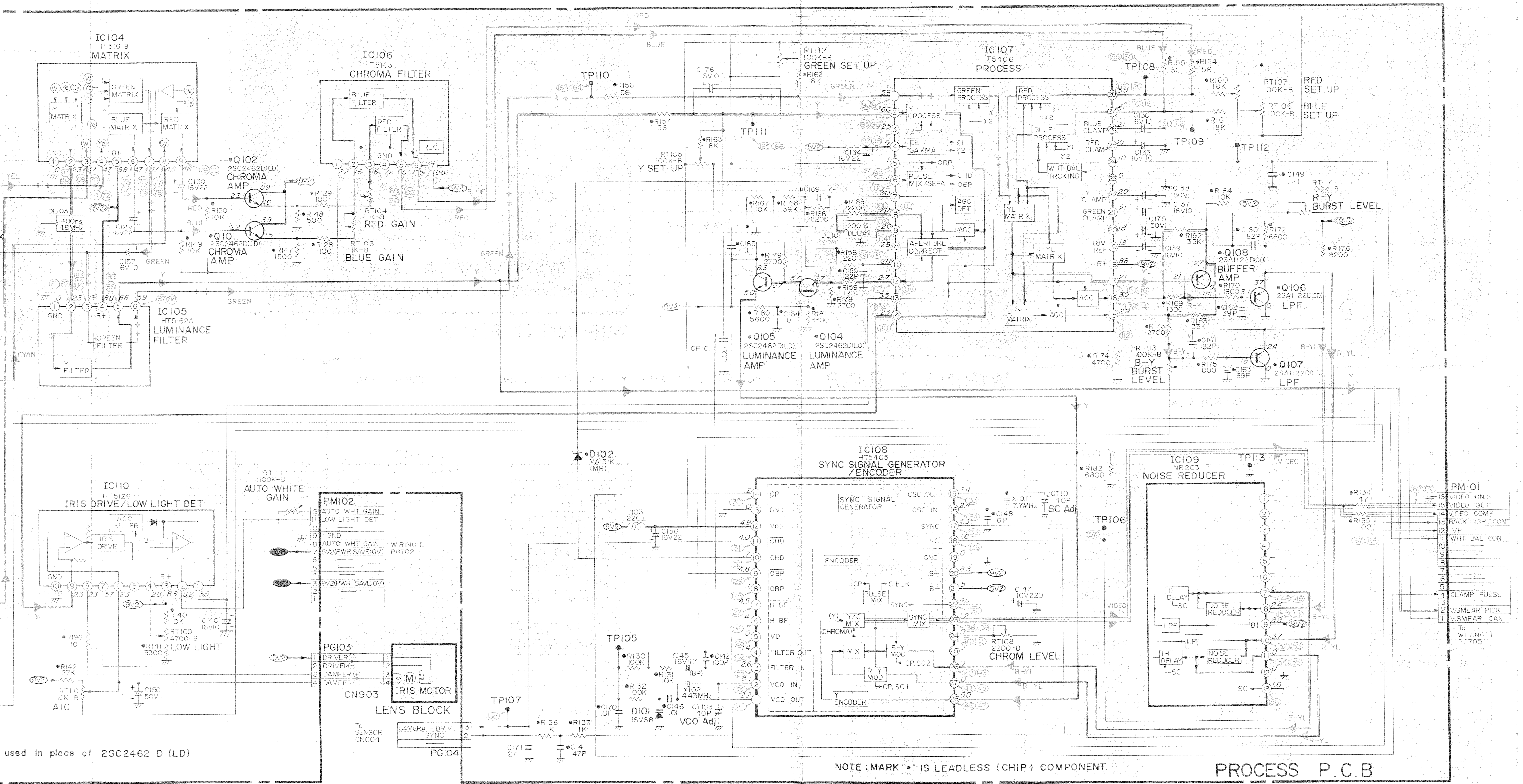
WIRING I/WIRING II/CONTROL	65
PROCESS	70
VERTICAL SMEAR	91
INTERFACE	97
ELECTRONIC VIEWFINDER	103

PROCESS SCHEMATIC DIAGRAM



IC102
BA7122L
YEL INTEGRATION
INTE-GRATION
AMP
AMP
GND
B+
IC104
HT5161B
MATRIX
GREEN MATRIX
Y MATRIX
BLUE MATRIX
RED MATRIX
IC106
HT5163
CHROMA FILTER
BLUE FILTER
RED FILTER
REG
TP110
R156 56
C176 16V10
RT112 100K-B
GREEN SET UP
R162 18K
R157 56
TP111
R163 18K
RT105 100K-B
Y'SET UP
C134 16V22
PG101
9V2(PWR SAVE:OV)
YEL SIGNAL
Cy SIGNAL
WHT SIGNAL
GND
To SENSOR CN001
L101 100μ
R115 3300
R114 680
C113 39P
R102 2700
C111 16V22
C112 16V10
R190 2200
C118 39P
R119 2200
C117 39P
R116 4700
R118 2200
R117 2200
C114 .01
C115 39P
C116 39P
C119 16V22
R120 1K
DL102 140ns DELAY
RT101 1K-B
YEL MATRIX
C131 1
R153 82K
C132 10V220
R152 15K
DL103 400ns 4.8MHz
C129 16V22
C157 16V10
C130 16V22
Q102 2SC2462D(LD) CHROMA AMP
Q101 2SC2462D(LD) CHROMA AMP
R150 10K
R149 10K
R129 100
R148 1500
R147 1500
R128 100
RT104 1K-B
RED GAIN
RT103 1K-B
BLUE GAIN
IC103
BA7122L
CYAN INTEGRATION
IC105
HT5162A
LUMINANCE FILTER
GREEN FILTER
Y FILTER
R122 3300
R121 680
C122 39P
C121 16V10
C127 39P
R191 2200
R126 2200
C126 39P
R123 4700
R125 2200
R124 2200
C125 39P
C128 16V22
R127 1K
C123 .01
C124 39P
RT102 1K-B
CYAN MATRIX
C120 16V22
R103 2700
R167 10K
R168 39K
C169 7P
R188 2200
R166 8200
DL104 200ns DELAY
C165 1
R179 2700
R158 220
C159 22P
R159 120
R178 2700
R180 5600
C164 .01
R181 3300
Q105 2SC2462D(LD) LUMINANCE AMP
Q104 2SC2462D(LD) LUMINANCE AMP
CP101
D102 MA151K (MH)
IC108
HT5405
SYNC SIGNAL GENER
/ENCODER
CP
GND
VDD
CHD
CHD
OBP
OBP
H. BF
H. BF
VD
FILTER OUT
FILTER IN
VCO IN
VCO OUT
SYNC SIGNAL GENERATOR
ENCODER
PULSE MIX
Y/C MIX
MIX
B-Y MOD
R-Y MOD
Y ENCODER
L103 220μ
C156 16V22
TP105
R130 100K
R131 10K
C145 16V4.7
C142 100P
R132 100K
X102 4.43MHz
D101 1SV68
C170 .01
C146 .01
CT103 40P
VCO Adj
IC101
BA7122L
WHT INTEGRATION
R106 3300
C103 27P
R105 680
CT102 20P
C102 16V10
C108 39P
R189 2200
R110 2200
C107 39P
R107 4700
R109 2200
R108 2200
C104 .01
C106 39P
C105 39P
R111 1K
C109 16V22
R113 680
R112 330
DL101 70ns DELAY
C101 16V22
R101 2200
CT102
H.TRANSINT
PG102
H.INTEGRATION
GND
To SENSOR CN002
IC110
HT5126
IRIS DRIVE/LOW LIGHT DET
AGC KILLER
IRIS DRIVE
RT111 100K-B
AUTO WHITE GAIN
PM102
AUTO WHT GAIN
LOW LIGHT DET
GND
AUTO WHT GAIN
5V2(PWR SAVE:OV)
9V2(PWR SAVE:OV)
To WIRING II PG702
R140 10K
RT109 4700-B
LOW LIGHT
R141 3300
C140 16V10
R196 10
R142 27K
RT110 10K-B
AIC
C150 50V1
PG103
DRIVER⊕
DRIVER⊖
DAMPER⊕
DAMPER⊖
CN903
IRIS MOTOR
LENS BLOCK
TP107
R136 1K
R137 1K
C171 27P
C141 47P
CAMERA H.DRIVE
SYNC
PG104
To SENSOR CN004
9V2
5V2
RED
BLUE
GREEN
YEL
CYAN
WHT
Y
NOTE : MARK "•"
E
D
C
B
A
1
2
3
4
5
6
7
8
WHT
CYAN
YEL
YL
Y
WAVEFORM
RED
BLUE
GREEN
B-YL
R-YL
VIDEO
9V
5V

2SC1623(5)(L5), 2SC1623(6)(L6) and 2SD601 R (YR) can be used in place of 2SC2462 D (LD)


IC104 HT5161B MATRIX
IC106 HT5163 CHROMA FILTER
IC105 HT5162A LUMINANCE FILTER
Q102 2SC2462D(LD) CHROMA AMP
Q101 2SC2462D(LD) CHROMA AMP
RT104 1K-B RED GAIN
RT103 1K-B BLUE GAIN
DL103 400ns 4.8MHz
TP110
RT112 100K-B GREEN SET UP
RT105 100K-B Y SET UP
TP111
IC107 HT5406 PROCESS
TP108
RT107 100K-B RED SET UP
RT106 100K-B BLUE SET UP
TP109
TP112
RT114 100K-B R-Y BURST LEVEL
Q108 2SA1122D(CD) BUFFER AMP
Q106 2SA1122D(CD) LPF
Q107 2SA1122D(CD) LPF
RT113 100K-B B-Y BURST LEVEL
Q105 2SC2462D(LD) LUMINANCE AMP
Q104 2SC2462D(LD) LUMINANCE AMP
DL104 200ns DELAY
CP101
D102 MA151K (MH)
IC110 HT5126 IRIS DRIVE/LOW LIGHT DET
RT111 100K-B AUTO WHITE GAIN
PM102
AUTO WHT GAIN
LOW LIGHT DET
GND
AUTO WHT GAIN
5V2(PWR SAVE:0V)
9V2(PWR SAVE:0V)
To WIRING II PG702
PG103
DRIVER⊕
DRIVER⊖
DAMPER⊕
DAMPER⊖
CN903
IRIS MOTOR
LENS BLOCK
RT109 4700-B LOW LIGHT
RT110 10K-B AIC
TP105
TP107
D101 1SV68
X102 4.43MHz
CT103 40P VCO Adj
To SENSOR CN004
CAMERA H.DRIVE
SYNC
PG104
IC108 HT5405 SYNC SIGNAL GENERATOR /ENCODER
SYNC SIGNAL GENERATOR
ENCODER
X101 17.7MHz
CT101 40P SC Adj
TP106
RT108 2200-B CHROM LEVEL
IC109 NR203 NOISE REDUCER
TP113
PM101
VIDEO GND
VIDEO OUT
VIDEO COMP
BACK LIGHT CONT
VP
WHT BAL CONT
CLAMP PULSE
V.SMEAR PICK
V.SMEAR CAN
To WIRING I PG705
used in place of 2SC2462 D (LD)
NOTE : MARK "•" IS LEADLESS (CHIP) COMPONENT.
PROCESS P.C.B

FORM ———: RED ———: BLUE —+—: GREEN ———: B-YL ———: R-YL ═══: VIDEO, ———: 9V ———: 5V

SCHEMATIC DIAGRAM GUIDE PAGE

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VERTICAL SMEAR 91
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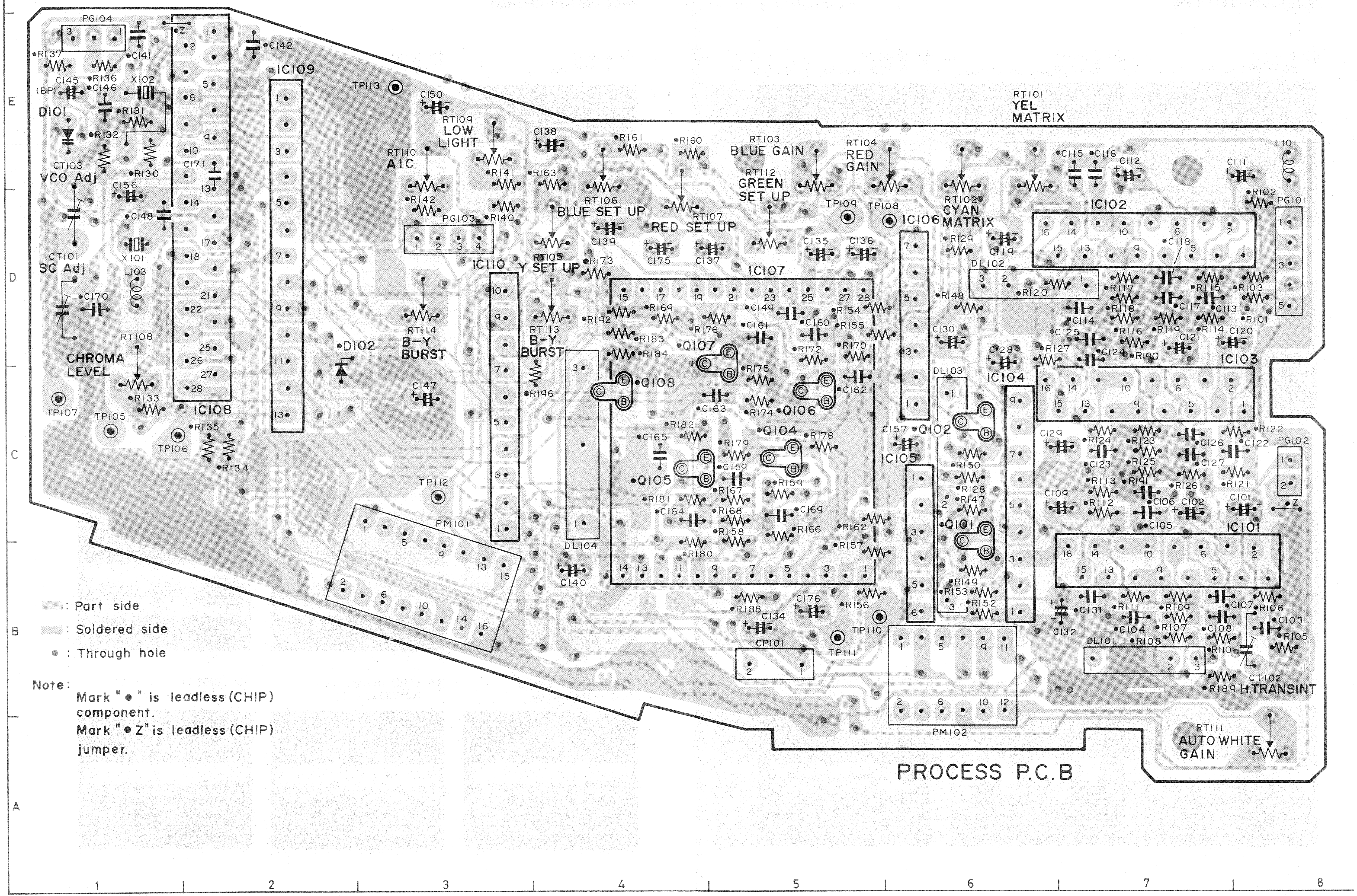
ELECTRONIC VIEWFINDER 103

4 5 6 7 8 9 10 11 12

PROCESS CIRCUIT BOARD DIAGRAM



PROCESS P.C.B
PG104
R137
C141
R136
C145
(BP)
C146
X102
D101
R131
R132
CT103
VCO Adj
R130
C156
C148
X101
CT101
SC Adj
L103
C170
RT108
CHROMA LEVEL
R133
TP107
TP105
TP106
R135
R134
IC108
C171
IC109
C142
TP113
C150
RT109
LOW LIGHT
RT110
AIC
R141
R142
R140
PG103
C138
R163
RT106
BLUE SET UP
C139
R161
R160
RT107
RED SET UP
C175
C137
RT105
Y SET UP
R173
IC110
RT114
B-Y BURST
RT113
B-Y BURST
R192
R196
D102
C147
TP112
PM101
DL104
C140
RT103
BLUE GAIN
RT112
GREEN SET UP
RT104
RED GAIN
TP109
TP108
IC107
C135
C136
R169
C149
R154
R183
R176
C161
C160
R155
R184
Q107
R172
R170
R175
C162
Q108
Q106
C163
R174
R182
Q104
R178
C165
R179
Q105
C159
R159
R167
R181
R168
C169
C164
R158
R166
R162
R180
R157
R188
C176
R156
C134
CP101
TP111
TP110
IC106
RT101
YEL MATRIX
RT102
CYAN MATRIX
R129
C119
DL102
R120
R148
C130
C128
IC104
DL103
C157
Q102
IC105
R150
R128
R147
Q101
R149
R153
R152
PM102
C115
C116
C112
C111
L101
R102
PG101
IC102
C118
R117
R115
R103
R118
C117
C113
C114
R101
C125
R116
R119
R114
C120
R127
C124
R190
C121
IC103
C129
R124
R123
C126
R122
C122
PG102
C123
R125
C127
R113
R191
R126
R121
C109
R112
C106
C102
C101
Z
C105
IC101
C131
R111
R109
C107
R106
C132
C104
R107
C108
C103
R105
DL101
R108
R110
CT102
R189
H.TRANSINT
RT111
AUTO WHITE GAIN
E
D
C
B
A
1
2
3
4
5
6
7
8

▨ : Part side

▨ : Soldered side

● : Through hole

Note: Mark "●" is leadless (CHIP) component.
Mark "● Z" is leadless (CHIP) jumper.

Q102

B	2.2
C	8.9
E	1.6

Q105

B	5.7
C	8.8
E	5.0

Q108

B	2.1
C	0
E	2.7

Q101

B	2.2
C	8.9
E	1.6

Q104

B	3.3
C	5.7
E	2.7

Q107

B	1.8
C	0
E	2.4

Q106

B	3.1
C	0
E	3.7

IC101

2	2.1	1	2.1
4	2.8	3	2.8
6	3.9	5	0
8	7.7	7	3.9
10	6.1	9	6.1
12	6.1	11	6.1
14	5.3	13	8.8
16	4.7	15	4.7

IC102

2	2.1	1	2.1
4	2.8	3	2.8
6	3.9	5	0
8	7.7	7	3.9
10	6.1	9	6.1
12	6.1	11	6.1
14	5.3	13	8.8
16	4.7	15	4.7

IC104

9	4.6
8	4.6
7	4.7
6	4.7
5	8.8
4	4.7
3	4.7
2	2.3
1	0

IC103

2	2.1	1	2.1
4	2.8	3	2.8
6	3.9	5	0
8	7.7	7	3.9
10	6.1	9	6.1
12	6.1	11	6.1
14	5.3	13	8.8
16	4.7	15	4.7

IC107

28	5.0	1	5.9
27	5.1	2	6.6
26	2.1	3	2.5
25	2.1	4	5
24	1.0	5	0.1
23	0	6	0.1
22	2.0	7	3.0
21	2.1	8	2.0
20	1.8	9	2.0
19	1.8	10	2.8
18	8.8	11	2.8
17	2.1	12	2.7
16	3.0	13	3.5
15	2.9	14	2.3

IC105

1	0
2	2.3
3	1.3
4	8.8
5	6.6
6	5.9

IC106

7	8.8
6	5
5	5
4	0
3	1.6
2	1.6
1	2.2

IC108

2	2.1	1	2.2
4	1.4	3	2.6
6	0.4	5	0
8	0.1	7	0.4
10	0.7	9	4.8
12	4.9	11	4.0
14	0.2	13	0
16	2.4	15	2.4
18	1.6	17	4.3
20	8.8	19	0
22	4.5	21	5
24	0	23	1.2
26	0	25	0
28	5.0	27	0

IC109

1	–
2	–
3	–
4	–
5	–
6	–
7	0
8	2.4
9	8.8
10	3.7
11	0
12	0
13	1.6

IC110

10	0
9	2.3
8	2.3
7	5.7
6	2.3
5	–
4	2.8
3	8.8
2	8.2
1	3.5

PM101

16	VIDEO GND
15	VIDEO OUT
14	VIDEO COMP
13	BACK LIGHT CONT
12	VP
11	WHT BAL CONT
10	—
9	—
8	—
7	—
6	—
5	—
4	CLAMP PULSE
3	—
2	V.SMEAR PICK
1	V.SMEAR CAN

To WIRING I PG705

PG101

1	9V2(PWR SAVE :0V)
2	YEL SIGNAL
3	Cy SIGNAL
4	WHT SIGNAL
5	GND

To SENSOR CN001

PG102

1	H.INTEGRATION
2	GND

To SENSOR CN002

PG103

1	DRIVER ⊕
2	DRIVER ⊖
3	DAMPER ⊕
4	DAMPER ⊖

To LENS BLOCK CN903

PG104

3	CAMERA H.DRIVE
2	SYNC
1	—

To SENSOR CN004

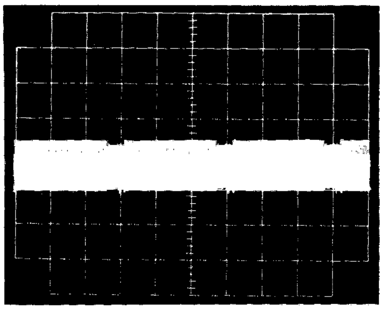
PM102

12	AUTO WHT GAIN
11	LOW LIGHT DET
10	—
9	GND
8	AUTO WHT GAIN
7	5V2(PWR SAVE :0V)
6	—
5	—
4	—
3	9V2(PWR SAVE :0V)
2	—
1	—

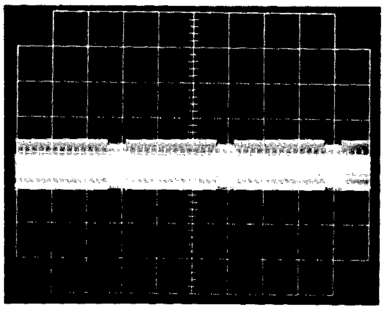
To WIRING II PG702

PROCESS WAVEFORMS

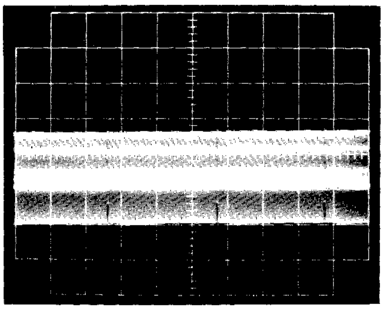
① IC101-2
0.1V/20μsec. div



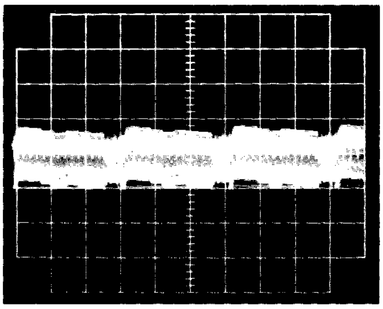
③ IC101-3
0.1/20 μsec. div



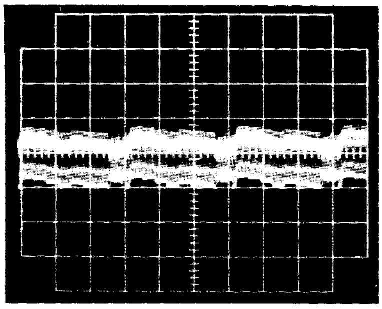
⑤ IC101-6
0.1V/20 μsec. div



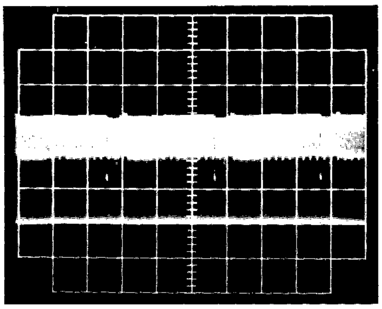
② IC101-2 (Color bar)
0.2V/20 μsec. div



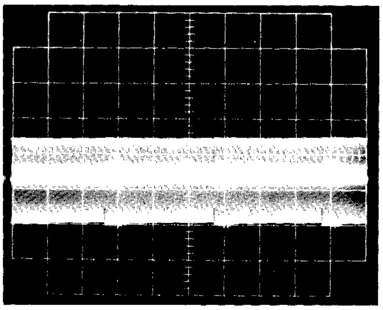
④ IC101-3 (Color bar)
0.2V/20 μsec. div



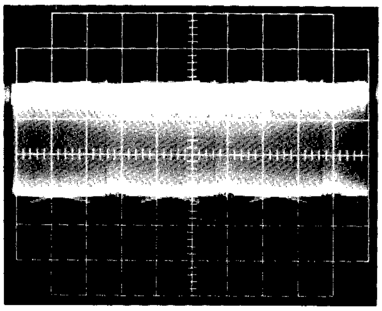
⑥ IC101-6 (Color bar)
0.2V/20 μsec. div



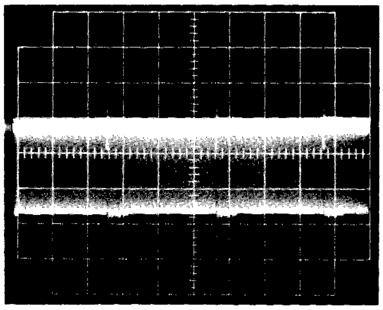
⑦ IC101-7
0.1V/20 μsec. div



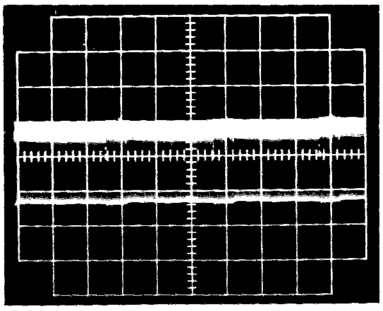
⑨ IC101-9
50mV/20 μsec. div



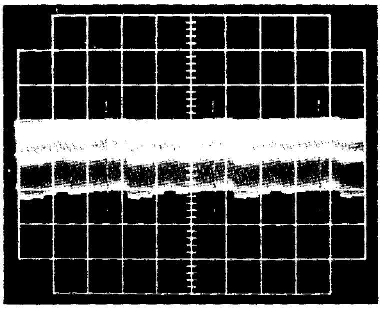
⑪ IC101-10
50mV/20 μsec. div



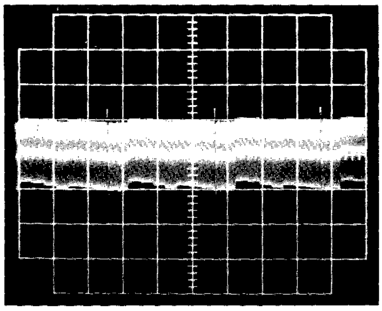
⑧ IC101-7 (Color bar)
0.2V/20 μsec. div



⑩ IC101-9 (Color bar)
0.2V/20 μsec. div

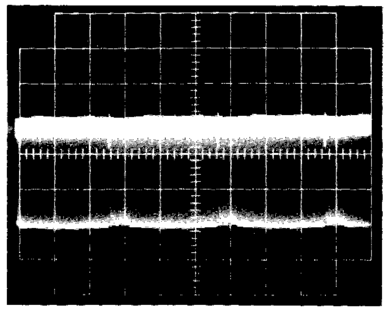


⑫ IC101-10 (Color bar)
0.2V/20 μsec. div

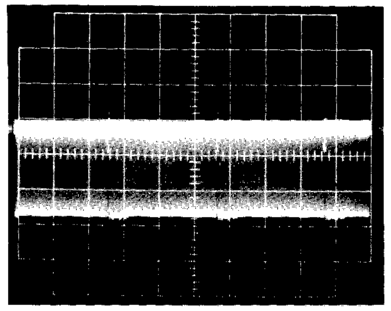


PROCESS WAVEFORMS

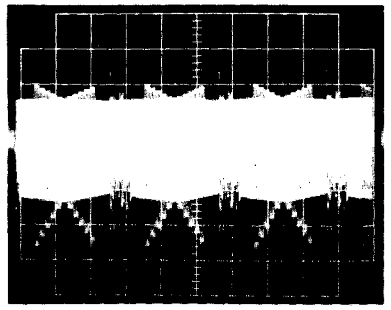
⑬ IC101-11
50mV/20 μsec. div



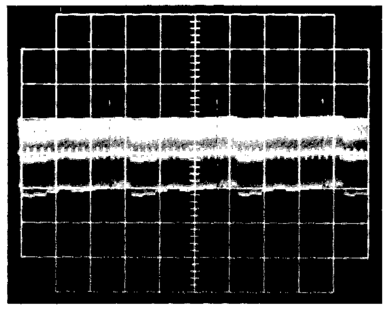
⑮ IC101-12
50mV/20 μsec. div



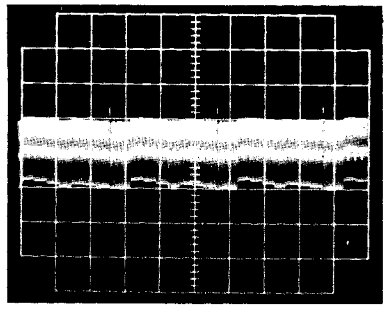
⑰ IC101-14
0.1V/20 μsec. div



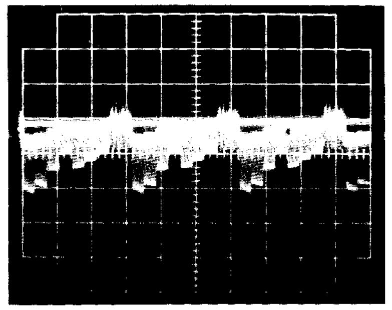
⑭ IC101-11 (Color bar)
0.2V/20 μsec. div



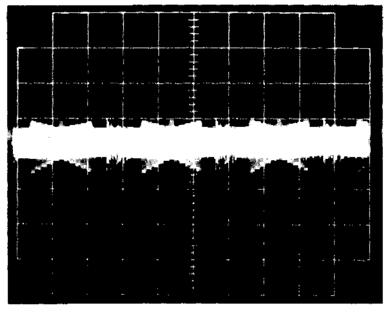
⑯ IC101-12 (Color bar)
0.2V/20 μsec. div



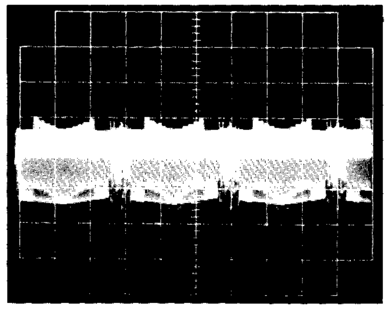
⑱ IC101-14 (Color bar)
0.5V/20 μsec. div



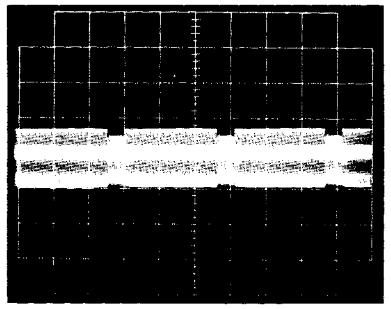
⑲ IC101-15
50mV/20 μsec. div



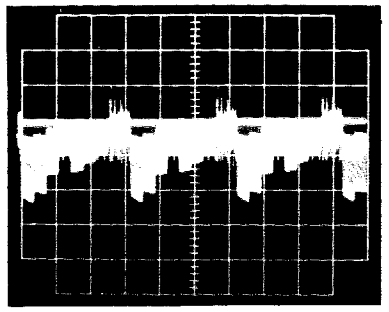
㉑ IC101-16
50mV/20 μsec. div



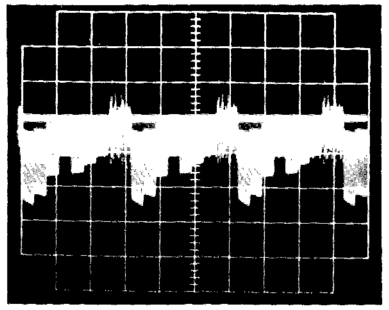
㉓ IC101-2
0.1V/20 μsec. div



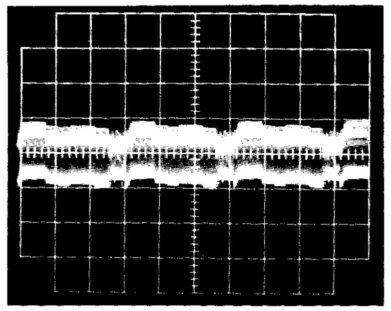
⑳ IC101-15 (Color bar)
0.1V/20 μsec. div



㉒ IC101-16 (Color bar)
0.2V/20 μsec. div

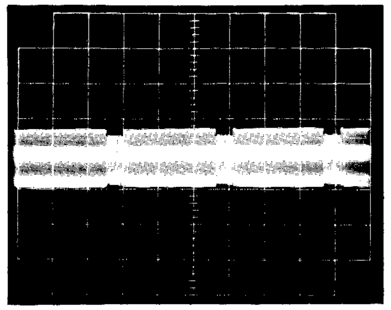


㉔ IC102-2 (Color bar)
0.2V/20 μsec. div

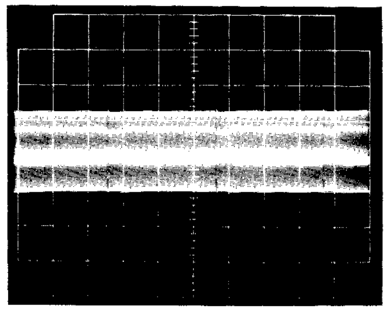


PROCESS WAVEFORMS

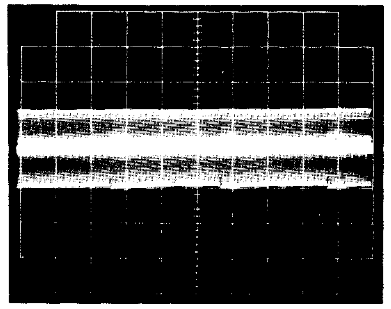
㉕ IC102-3
0.1V/20 μsec. div



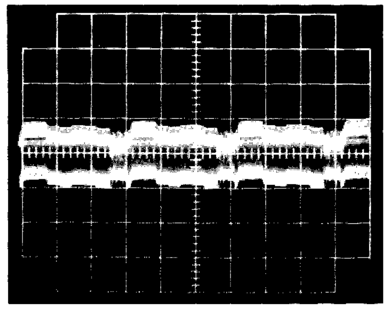
㉗ IC102-6
0.1V/20 μsec. div



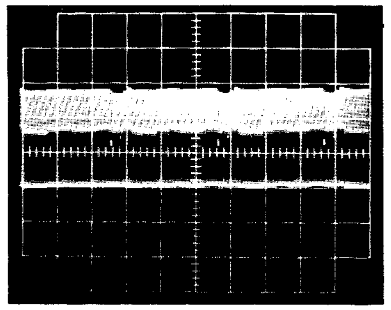
㉙ IC102-7
0.1V/20 μsec. div



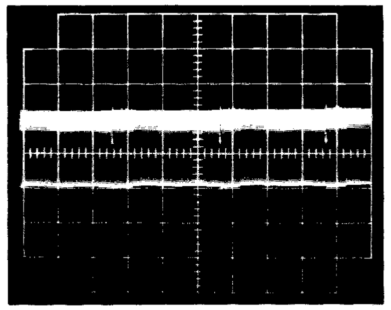
㉖ IC102-3 (Color bar)
0.2V/20 μsec. div



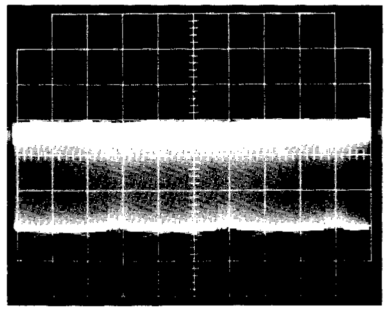
㉘ IC102-6 (Color bar)
0.2V/20 μsec. div



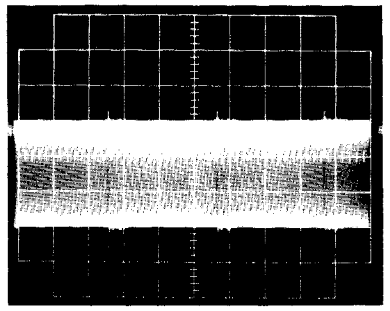
㉚ IC102-7 (Color bar)
0.2V/20 μsec. div



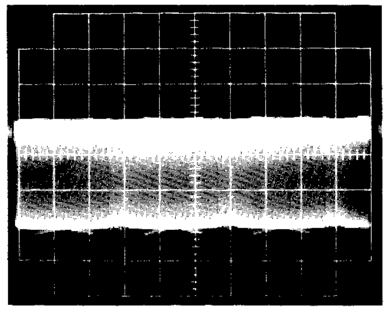
㉛ IC102-9
50mV/20 μsec. div



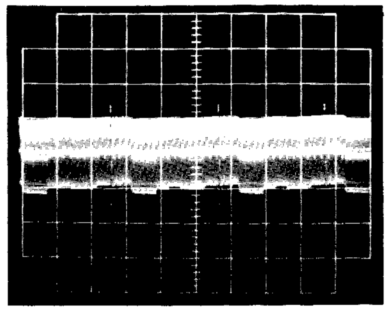
㉝ IC102-10
50mV/20 μsec. div



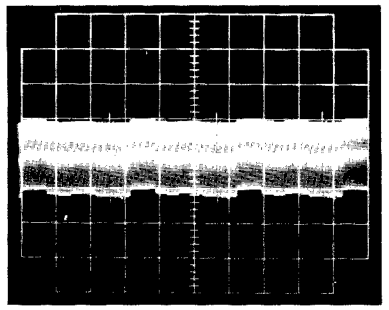
㉟ IC102-11
50mV/20 μsec. div



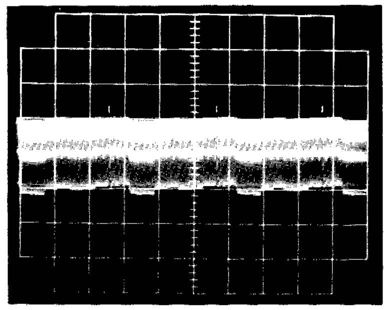
㉜ IC102-9 (Color bar)
0.2V/20 μsec. div



㉞ IC102-10 (Color bar)
0.2V/20 μsec. div

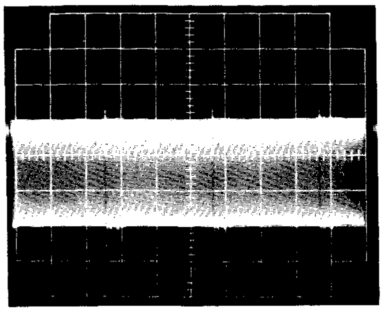


㊱ IC102-11 (Color bar)
0.2V/20 μsec. div

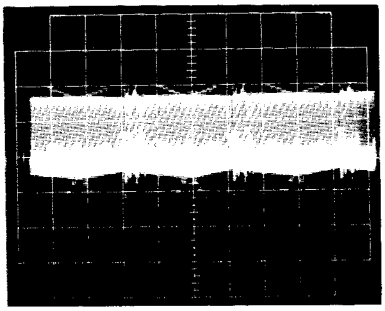


PROCESS WAVEFORMS

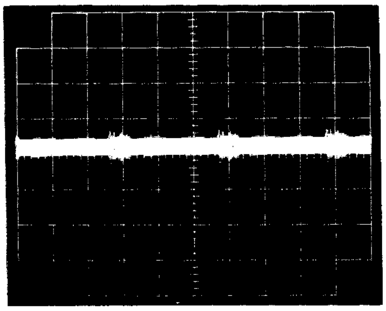
(37) IC102-12
50mV/20 μsec. div



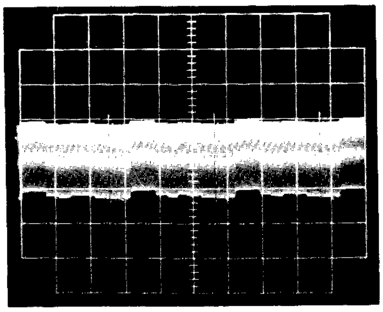
(39) IC102-14
0.1V/20 μsec. div



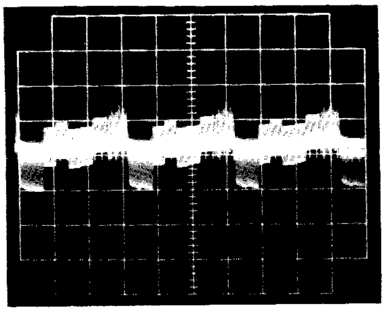
(41) IC102-15
50mV/20 μsec. div



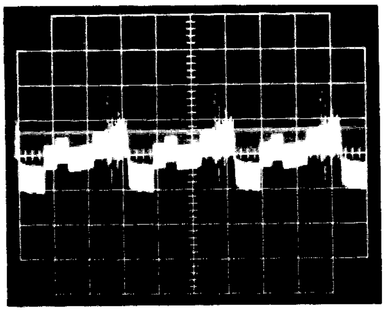
(38) IC102-12 (Color bar)
0.2V/20 μsec. div



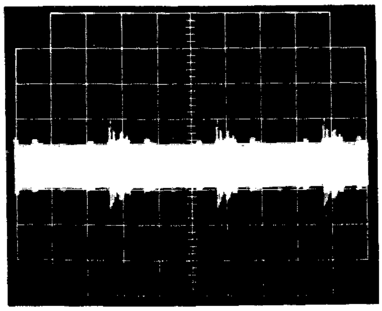
(40) IC102-14 (Color bar)
0.5V/20 μsec. div



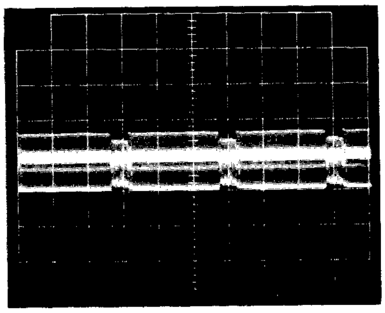
(42) IC102-15 (Color bar)
0.1V/20 μsec. div



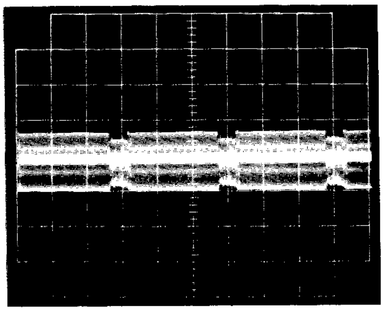
(43) IC102-16
50mV/20 μsec. div



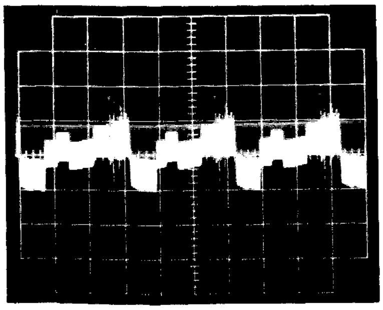
(45) IC103-2
0.1V/20 μsec. div



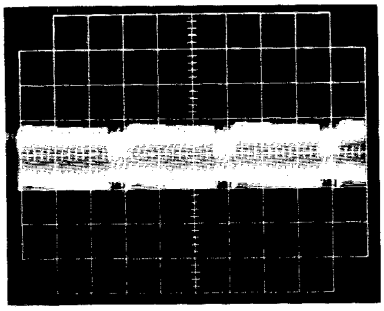
(47) IC103-3
0.1V/20 μsec. div



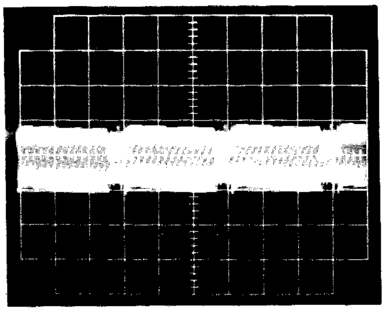
(44) IC102-16 (Color bar)
0.2V/20 μsec. div



(46) IC103-2 (Color bar)
0.2V/20 μsec. div

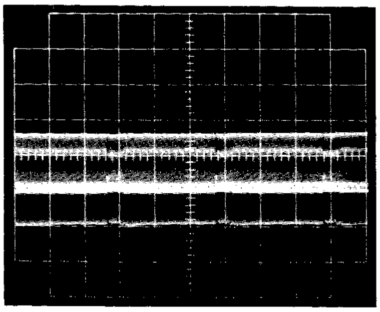


(48) IC103-3 (Color bar)
0.2V/20 μsec. div

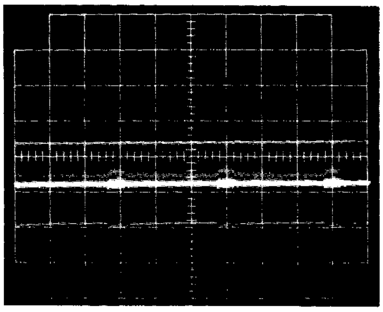


PROCESS WAVEFORMS

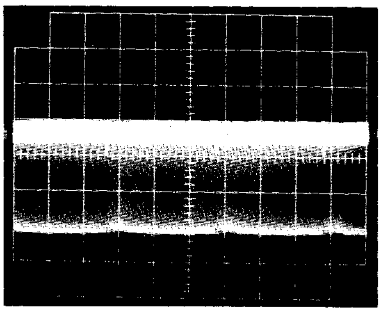
㊾ IC103-6
0.1V/20 μsec. div



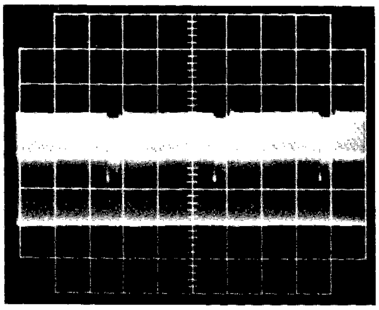
(51) IC103-7
0.1V/20 μsec. div



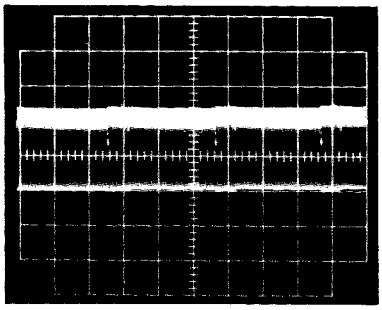
(53) IC103-9
50mV/20 μsec. div



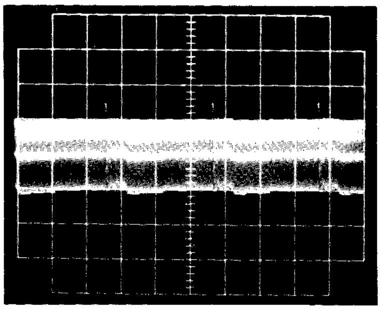
㊿ IC103-6 (Color bar)
0.2V/20 μsec. div



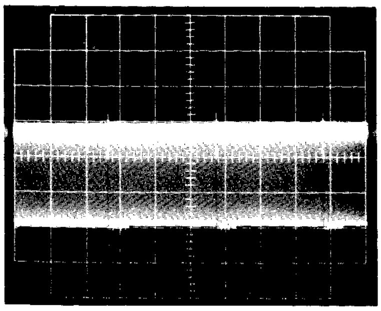
(52) IC103-7 (Color bar)
0.2V/20 μsec. div



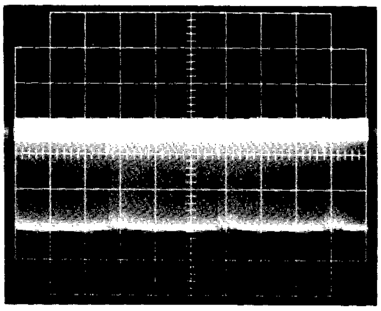
(54) IC103-9 (Color bar)
0.2V/20 μsec. div



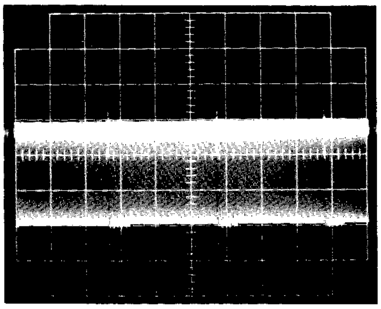
(55) IC103-10
50mV/20 μsec. div



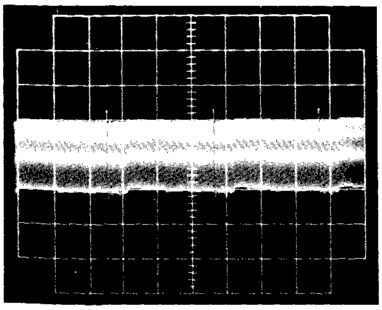
(57) IC103-11
50mV/20 μsec. div



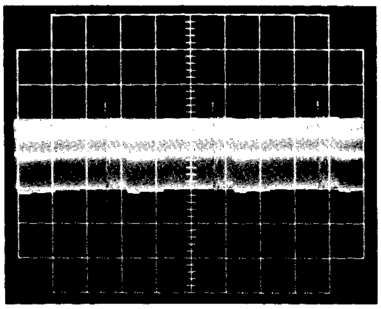
(59) IC103-12
50mV/20 μsec. div



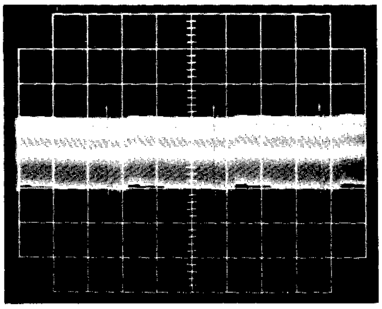
(56) IC103-10 (Color bar)
0.2V/20 μsec. div



(58) IC103-11 (Color bar)
0.2V/20 μsec. div

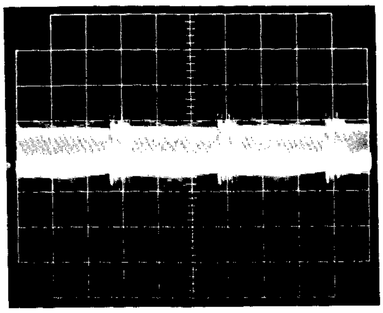


(60) IC103-12 (Color bar)
0.2V/20 μsec. div

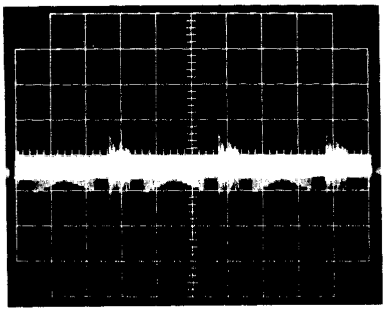


PROCESS WAVEFORMS

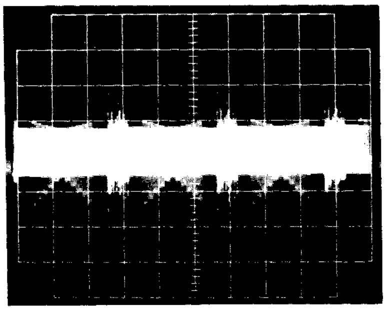
(61) IC103-14
0.1V/20 μsec. div



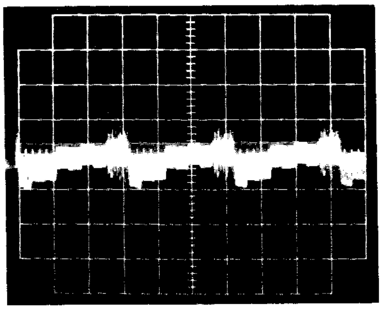
(63) IC103-15
50mV/20 μsec. div



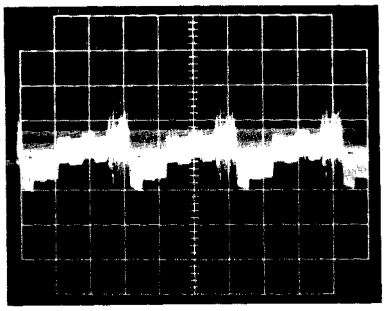
(65) IC103-16
50mV/20 μsec. div



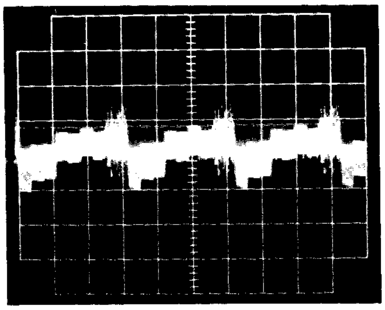
(62) IC103-14 (Color bar)
0.5V/20 μsec. div



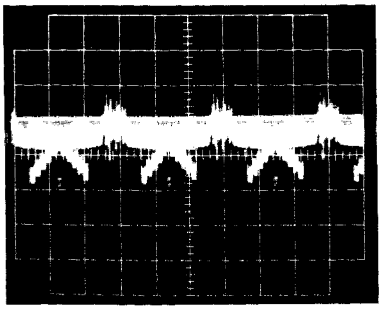
(64) IC103-15 (Color bar)
0.1V/20 μsec. div



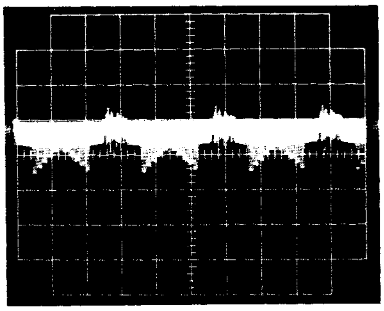
(66) IC103-16 (Color bar)
0.2V/20 μsec. div



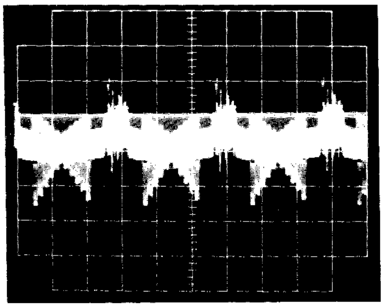
(67) IC104-2
0.1V/20 μsec. div



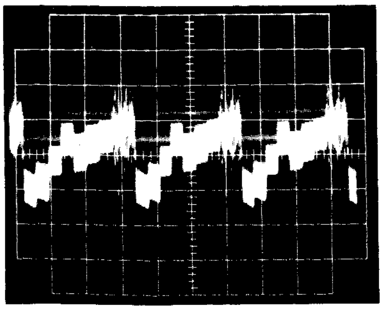
(69) IC104-3
50mV/20 μsec. div



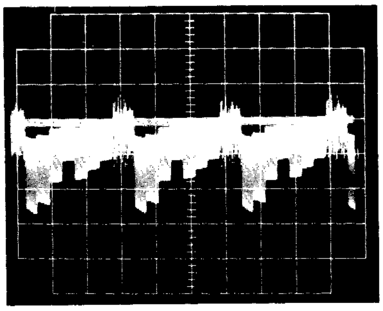
(71) IC104-4
0.2V/20 μsec. div



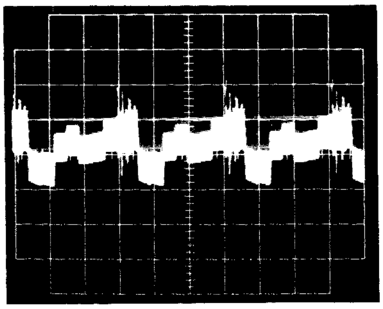
(68) IC104-2 (Color bar)
50mV/20 μsec. div



(70) IC104-3 (Color bar)
0.2V/20 μsec. div

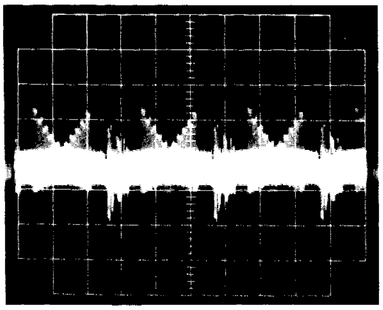


(72) IC104-4 (Color bar)
0.2V/20 μsec. div

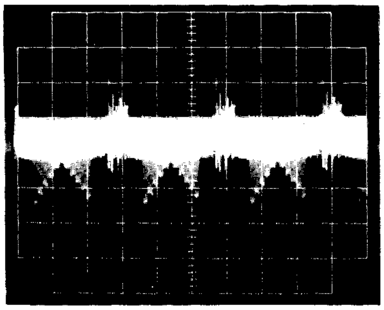


PROCESS WAVEFORMS

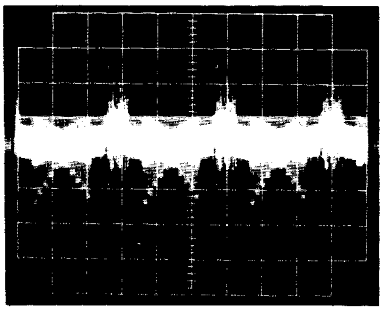
(73) IC104-6
50mV/20 μsec. div



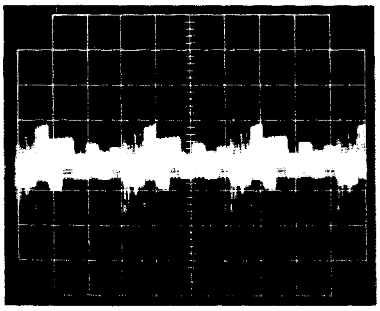
(75) IC104-7
50mV/20 μsec. div



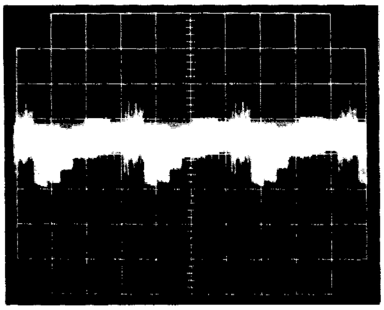
(77) IC104-8
0.2V/20 μsec. div



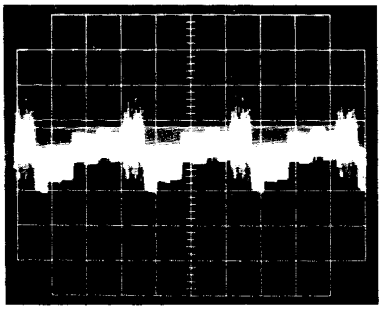
(74) IC104-6 (Color bar)
50mV/20 μsec. div



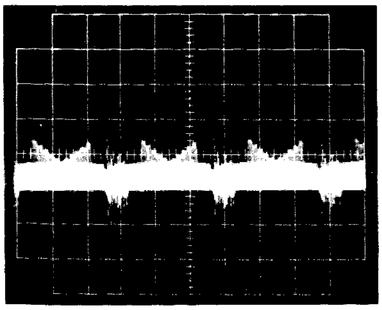
(76) IC104-7 (Color bar)
50mV/20 μsec. div



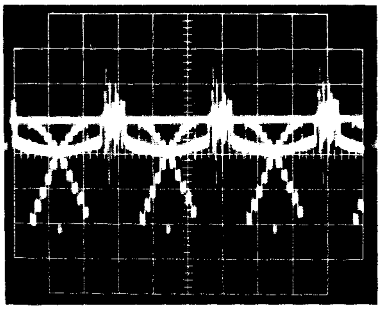
(78) IC104-8 (Color bar)
0.2V/20 μsec. div



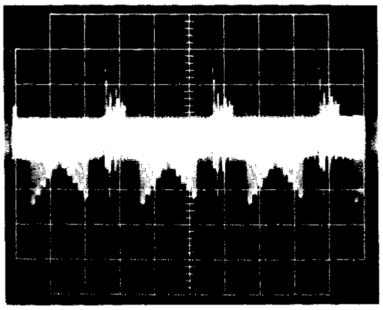
(79) IC104-3
0.1V/20 μsec. div



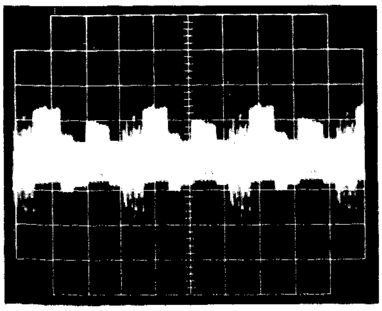
(81) IC105-2
50mV/20 μsec. div



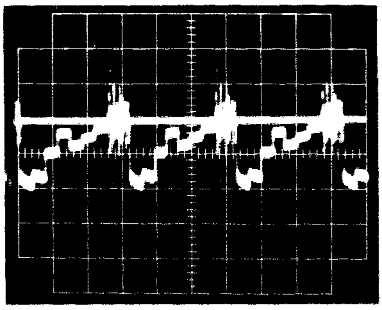
(83) IC105-3
50mV/20 μsec. div



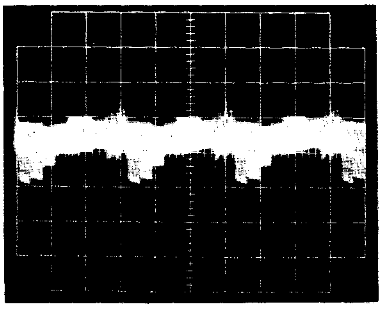
(80) IC104-9 (Color bar)
50mV/20 μsec. div



(82) IC105-2 (Color bar)
50mV/20 μsec. div

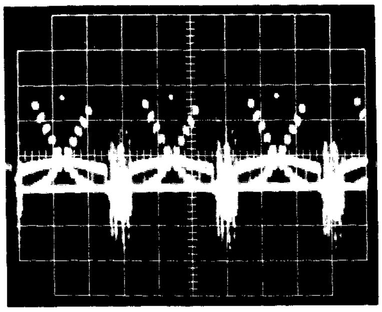


(84) IC105-3 (Color bar)
50mV/20 μsec. div

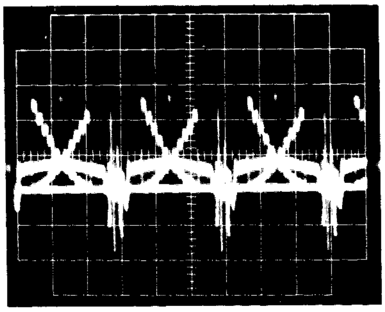


PROCESS WAVEFORMS

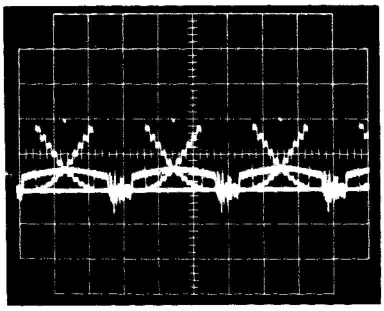
(85) IC105-5
0.1V/20 μsec. div



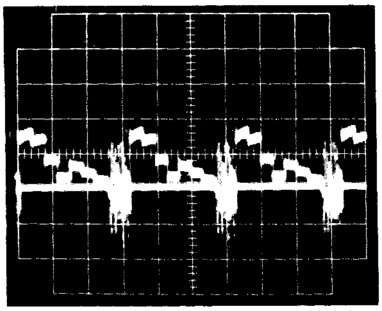
(87) IC 105-6
0.1V/20 μsec. div



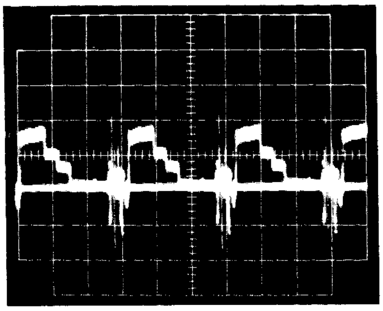
(89) IC106-5
0.2V/20 μsec. div



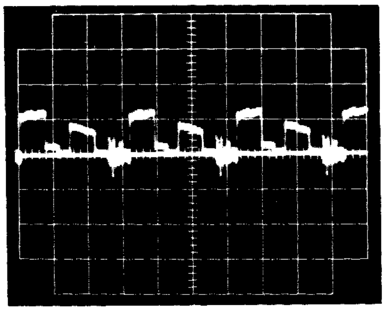
(86) IC105-5 (Color bar)
0.1V/20 μsec. div



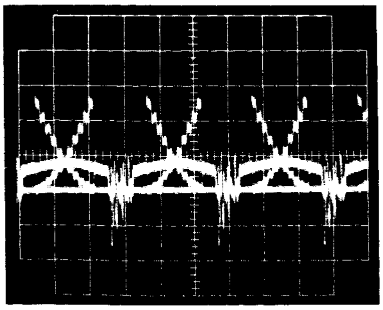
(88) IC105-6 (Color bar)
0.1V/20 μsec. div



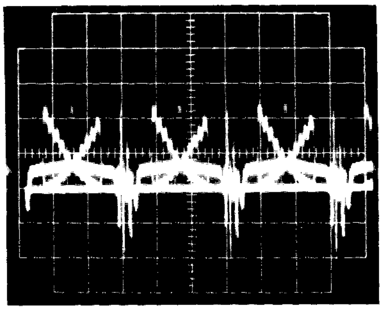
(90) IC106-5 (Color bar)
0.2V/20 μsec. div



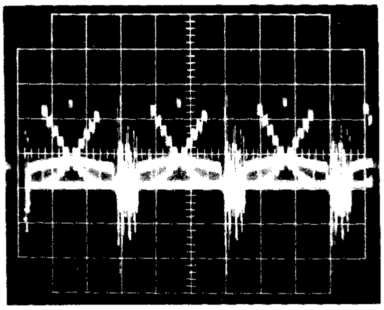
(91) IC106-6
0.2V/20 μsec. div



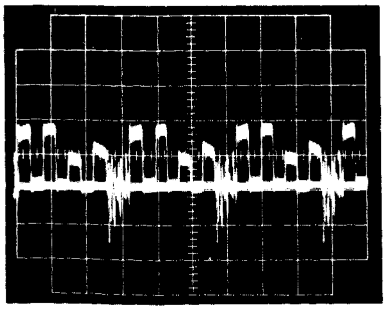
(93) IC107-1
0.1V/20 μsec. div



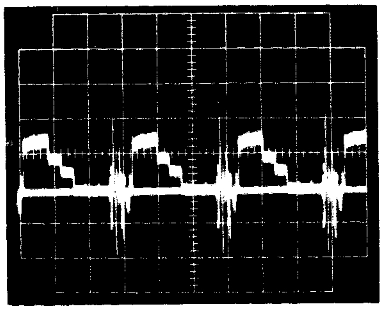
(95) IC107-2
0.1V/20 μsec. div



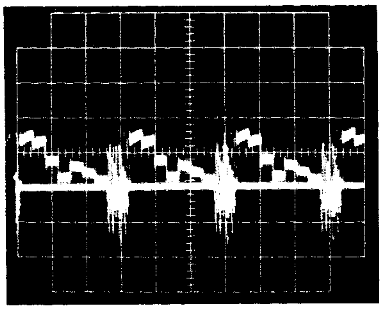
(92) IC106-6 (Color bar)
0.1V/20 μsec. div



(94) IC107-1 (Color bar)
0.1V/20 μsec. div



(96) IC107-2 (Color bar)
0.1V/20 μsec. div



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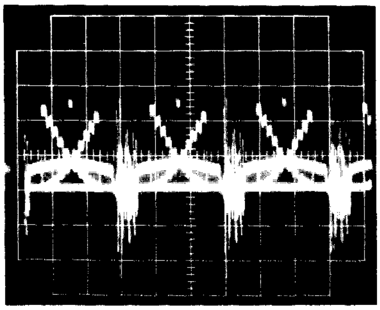
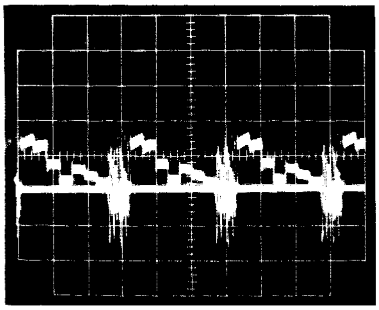
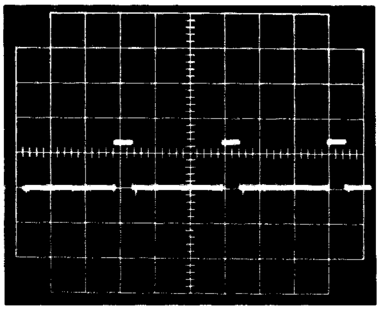
(97) IC107-3
0.1V/20 μsec. div



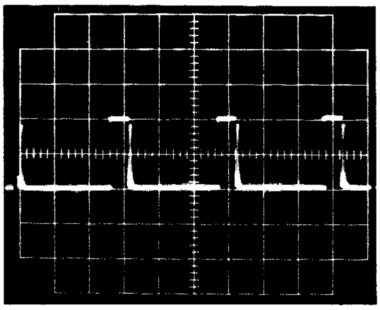
(98) IC107-3 (Color bar)
0.1V/20 μsec. div



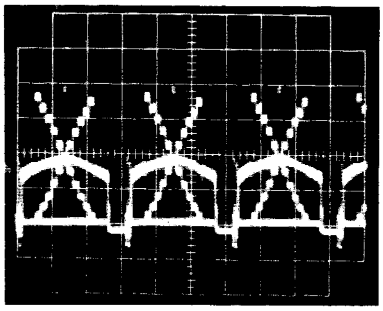
(99) IC107-5
0.1V/20 μsec. div



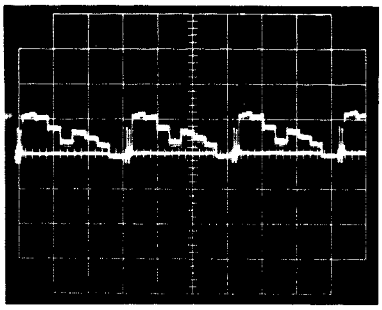
100 IC107-6
2V/20 μsec. div



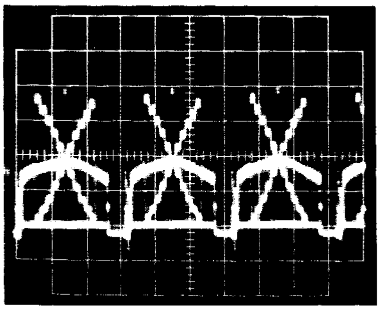
(101) IC107-8
0.2V/20 μsec. div



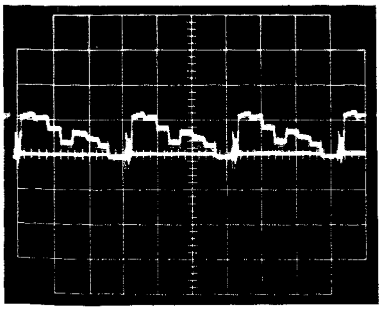
(102) IC107-8 (Color bar)
0.5V/20 μsec. div



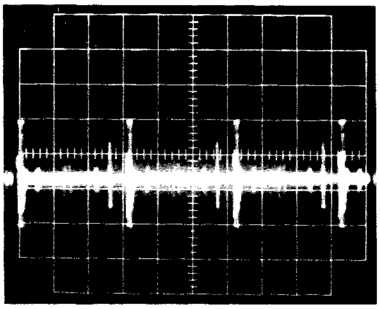
(103) IC107-9
0.2V/20 μsec. div



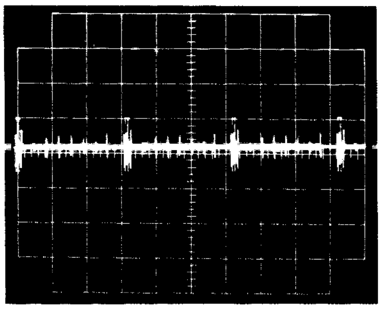
(104) IC107-9 (Color bar)
0.5V/20 μsec. div



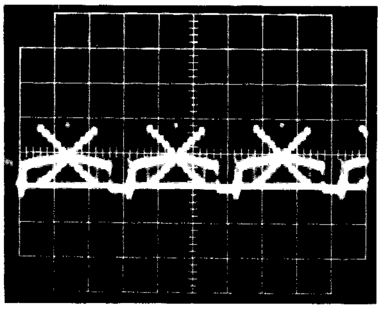
(105) IC107-11
0.5V/20 μsec. div



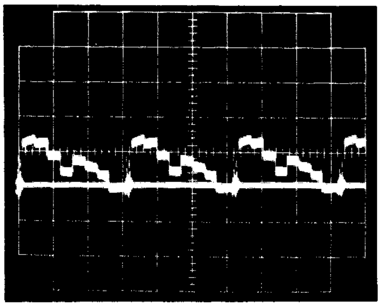
(106) IC107-11 (Color bar)
1V/20 μsec. div



(107) IC107-12
50mV/20 μsec. div



(108) IC107-12 (Color bar)
50mV/20 μsec. div



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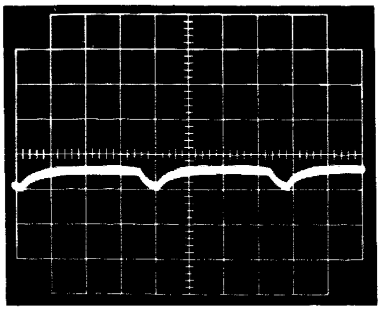
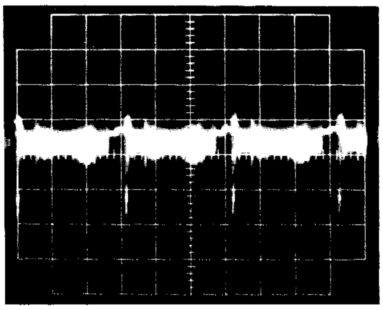
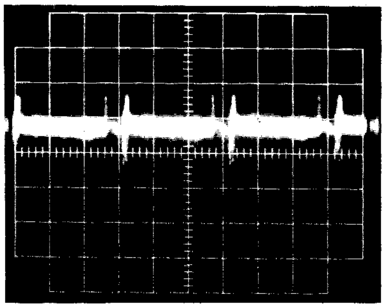
(109) IC107-13
50mV/5msec. div



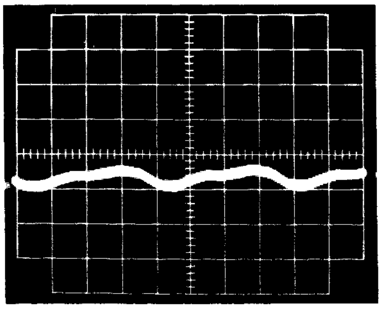
(111) IC107-15
0.2V/20 µsec. div



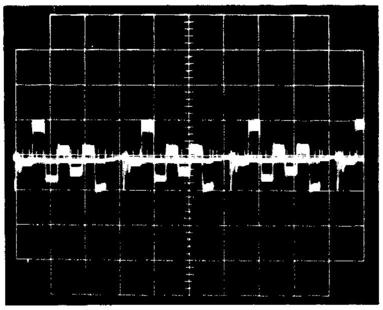
(113) IC107-16
0.2V/20 µsec. div



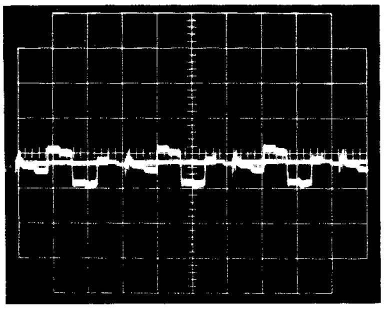
(110) IC107-14
50mV/5msec. div



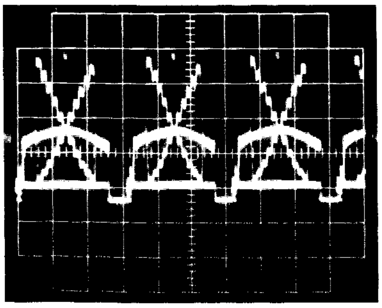
(112) IC107-15 (Color bar)
0.5V/20 µsec. div



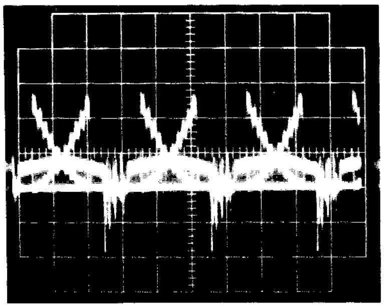
(114) IC107-16 (Color bar)
0.5V/20 µsec. div



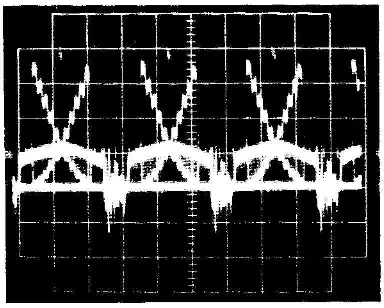
(115) IC107-17
0.2V/20 µsec. div



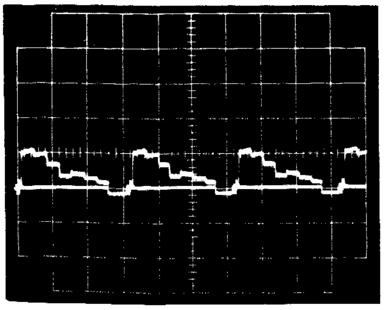
(117) IC107-27
0.1V/20 µsec. div



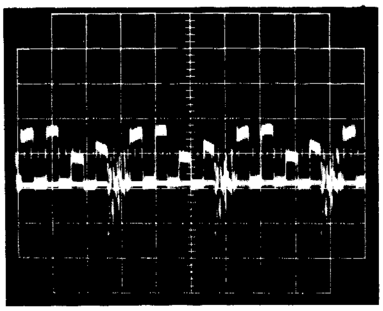
(119) IC107-28
0.1V/20 µsec. div



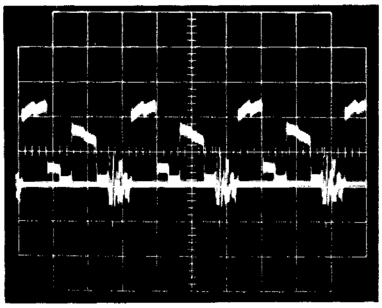
(116) IC107-17 (Color bar)
0.5V/20 sec. div



(118) IC107-27 (Color bar)
0.1V/20 µsec. div

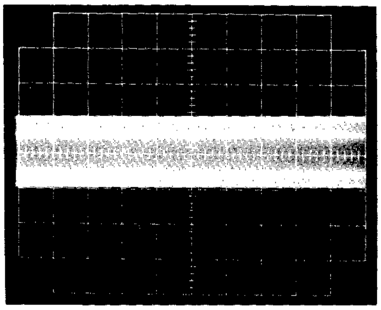


(120) IC107-28 (Color bar)
0.1V/20 µsec. div

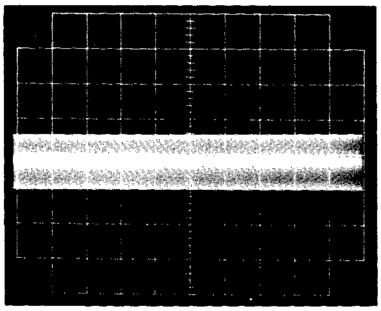


PROCESS WAVEFORMS

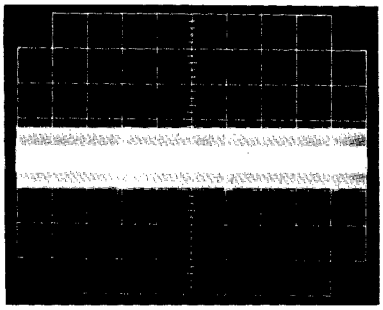
(121) IC108-1
0.5V/20 μsec. div



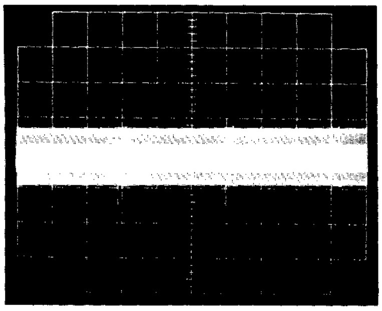
(122) IC108-2
1V/20 μsec. div



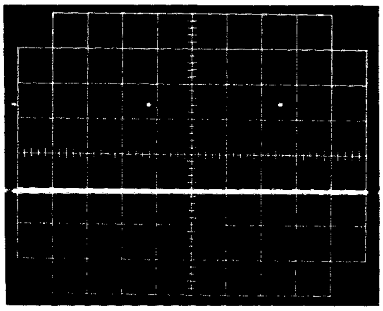
(123) IC108-3
50mV/20 μsec. div



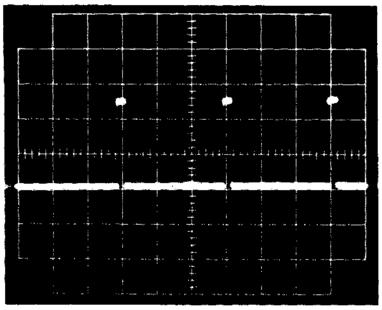
(124) IC108-4
50mV/20 μsec. div



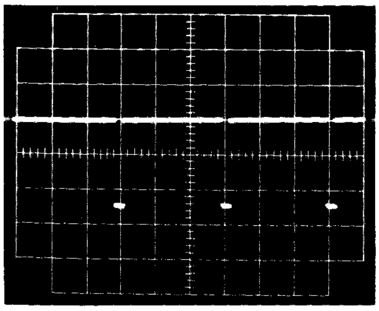
(125) IC108-5
2V/5msec. div



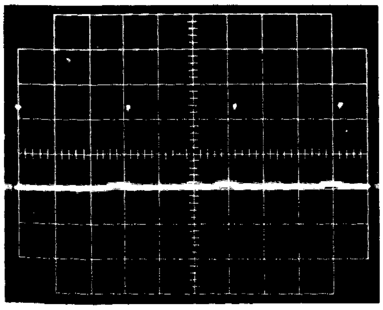
(126) IC108-6
2V/20 μsec. div



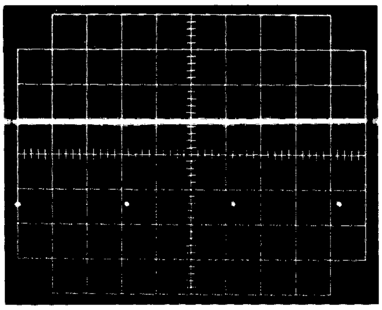
(127) IC108-7
2V/20 μsec. div



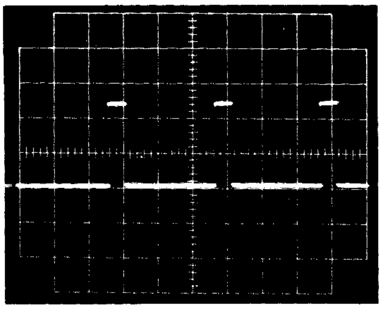
(128) IC108-8
2V/20 μsec. div



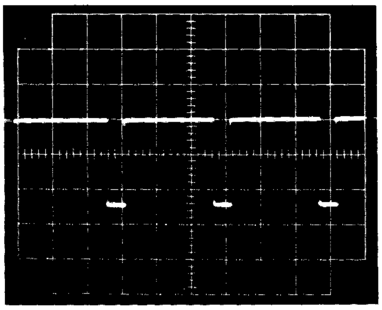
(129) IC108-9
2V/20 μsec. div



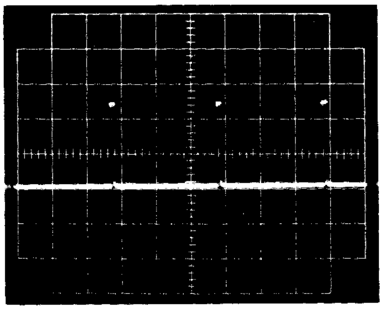
(130) IC108-10
2V/20 μsec. div



(131) IC108-11
2V/20 μsec. div

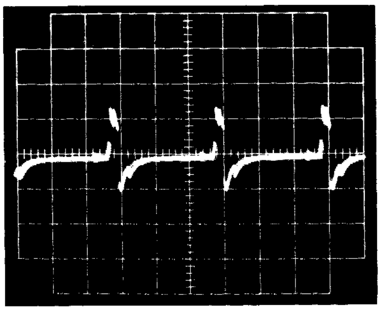


(132) IC108-14
2V/20 μsec. div

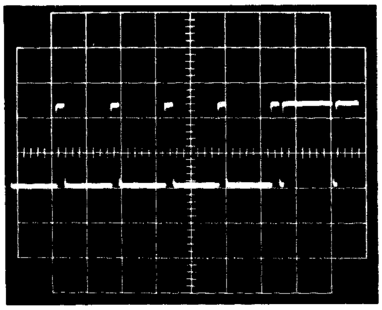


PROCESS WAVEFORMS

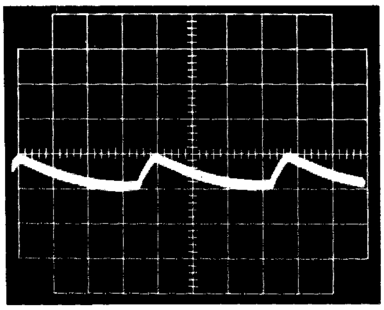
(133) IC108-15
0.5V/20 μsec. div



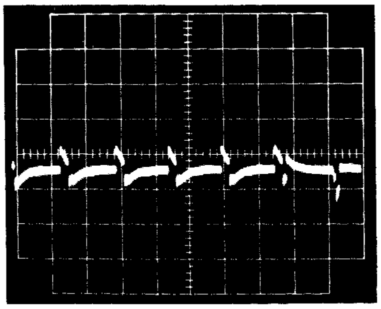
(135) IC108-17
2V/20 μsec. div



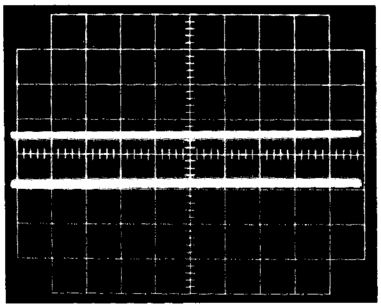
(137) IC108-22
50mV/5msec. div



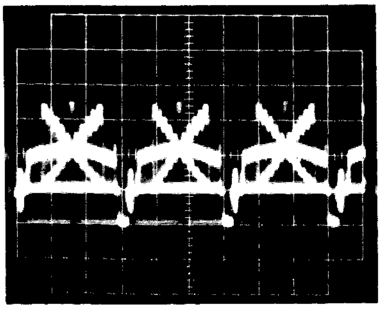
(134) IC108-16
50mV/20 μsec. div



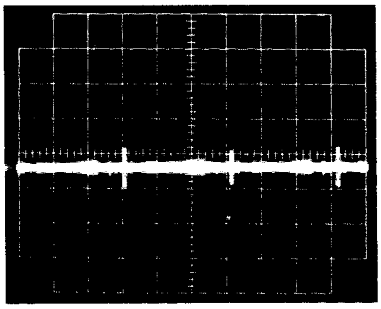
(136) IC108-18
0.5V/20 μsec. div



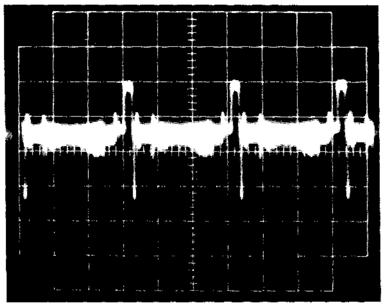
(138) IC108-23
0.5V/20 μsec. div



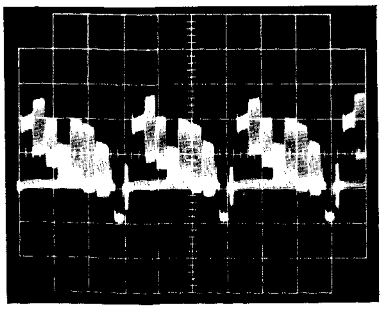
(140) IC108-24
0.2V/20 μsec. div



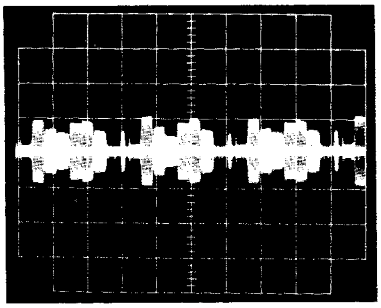
(142) IC108-26
0.1V/20 μsec. div



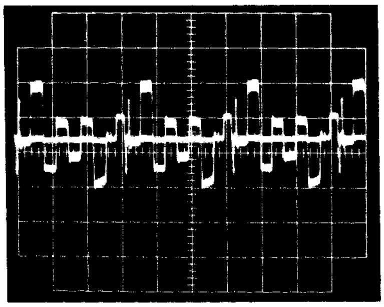
(139) IC108-23 (Color bar)
0.5V/20 μsec. div



(141) IC108-24 (Color bar)
0.2V/20 μsec. div

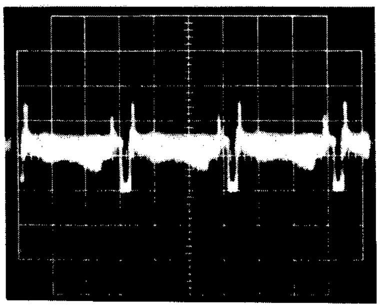


(143) IC108-26 (Color bar)
0.2V/20 μsec. div

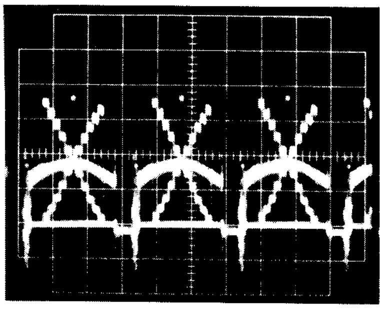


PROCESS WAVEFORMS

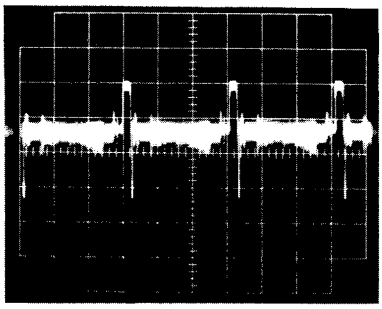
⑭④ IC108-27
0.1V/20 μsec. div



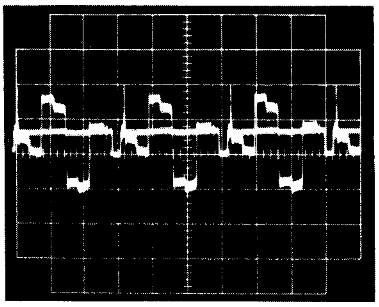
(146) IC108-28
0.5V/20 μsec. div



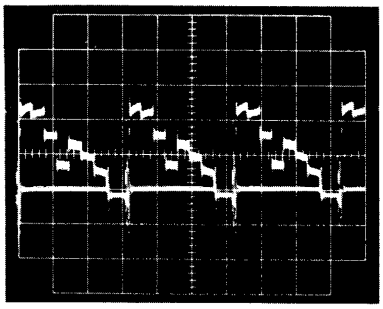
(148) IC109-7
0.1V/20 μsec. div



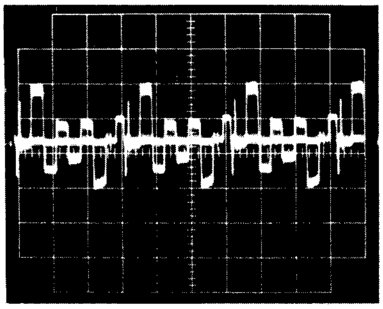
(145) IC108-27 (Color bar)
0.2V/20 μsec. div



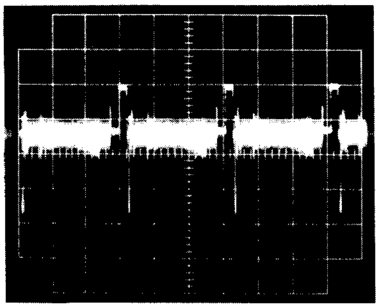
(147) IC108-28 (Color bar)
0.5V/20 μsec. div



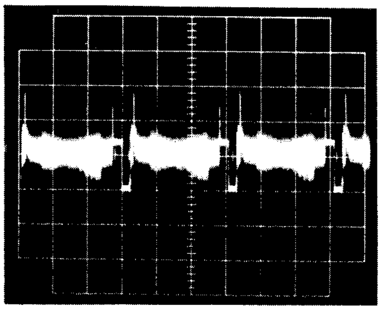
(149) IC109-7 (Color bar)
0.2V/20 μsec. div



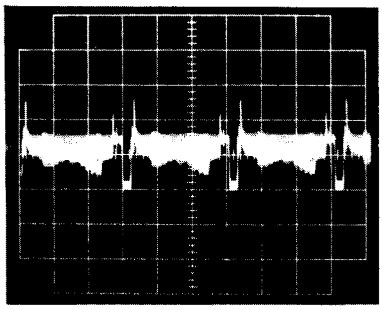
(150) IC109-8
0.1V/20 μsec. div



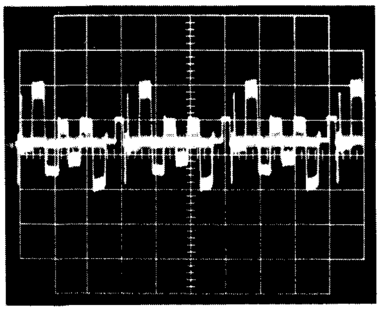
(152) IC109-10
0.1V/20 μsec. div



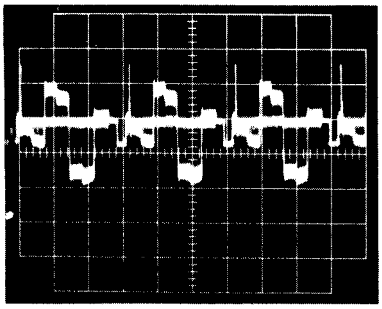
(154) IC109-11
0.1V/20 μsec. div



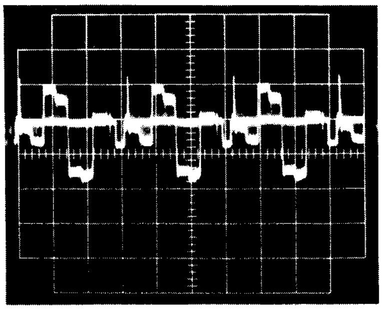
(151) IC109-8 (Color bar)
0.2V/20 μsec. div



(153) IC109-10 (Color bar)
0.2V/20 μsec. div

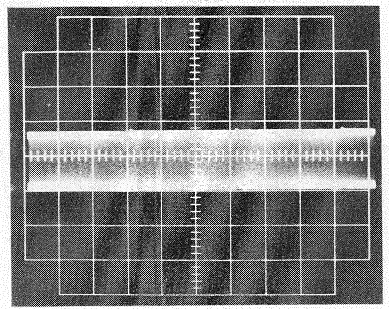


(155) IC109-11 (Color bar)
0.2V/20 μsec. div

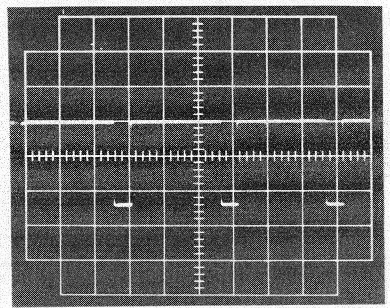


PROCESS WAVEFORMS

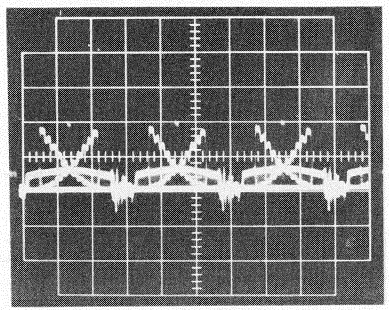
(156) IC109-13
0.5V/20 μsec. div



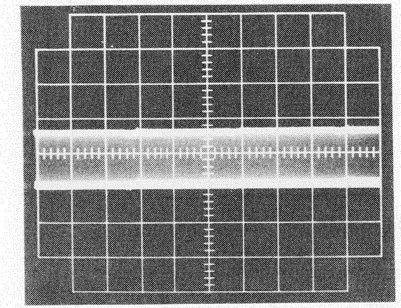
(158) TP107
2V/20 μsec. div



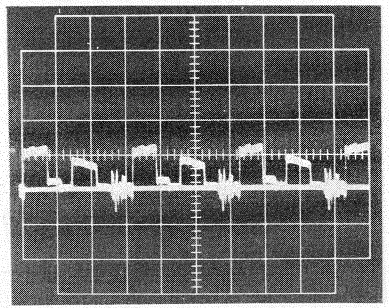
(159) TP108
0.2V/20 μsec. div



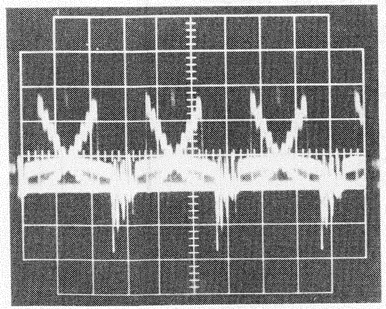
(157) TP106
0.5V/20 μsec. div



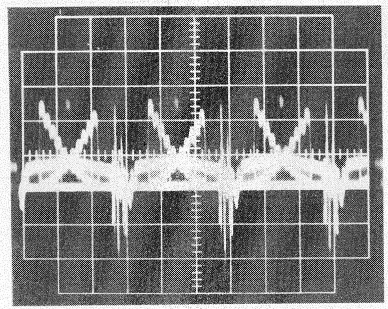
(160) TP108 (Color bar)
0.2V/20 μsec. div



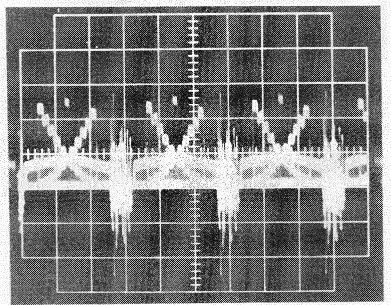
(161) TP109
0.1V/20 μsec. div



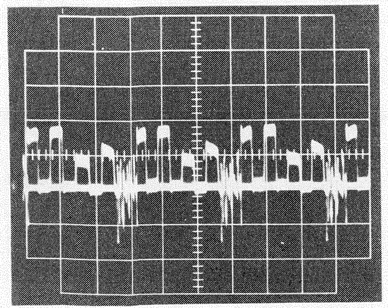
(163) TP110
0.1V/20 μsec. div



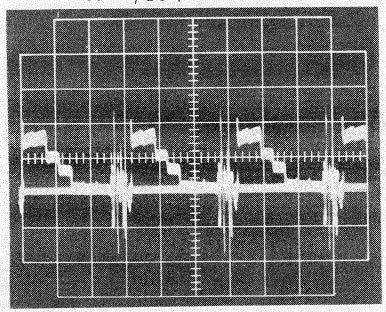
(165) TP111
0.1V/20 μsec. div



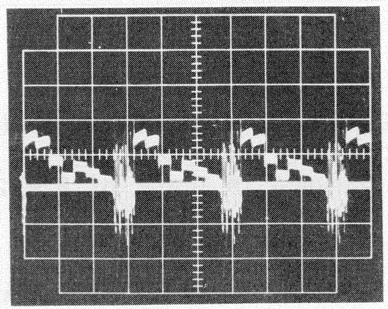
(162) TP109 (Color bar)
0.1V/20 sec. div



(164) TP110 (Color bar)
0.1V/10 μsec. div

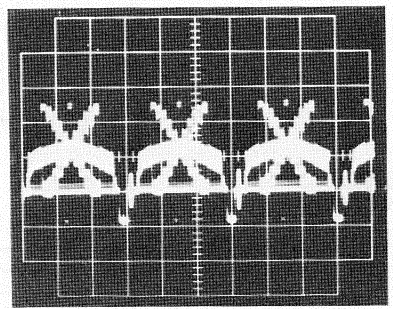


(166) TP111 (Color bar)
0.1V/20 μsec. div

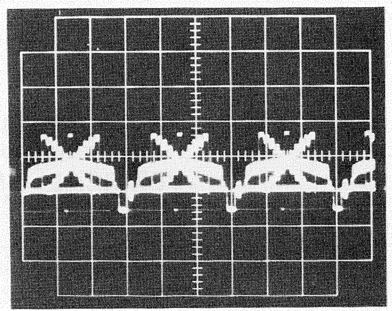


PROCESS WAVEFORMS

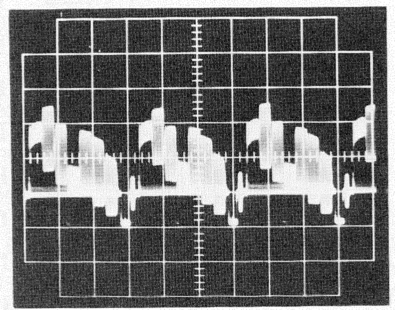
(167) PM101-14
0.5V/20 μsec. cm



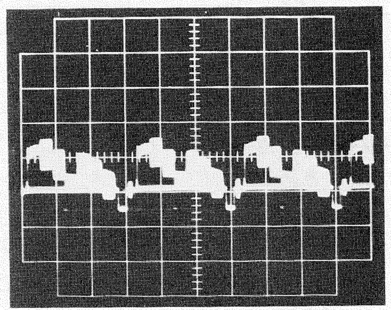
(169) PM101-15
0.5V/20 μsec. cm

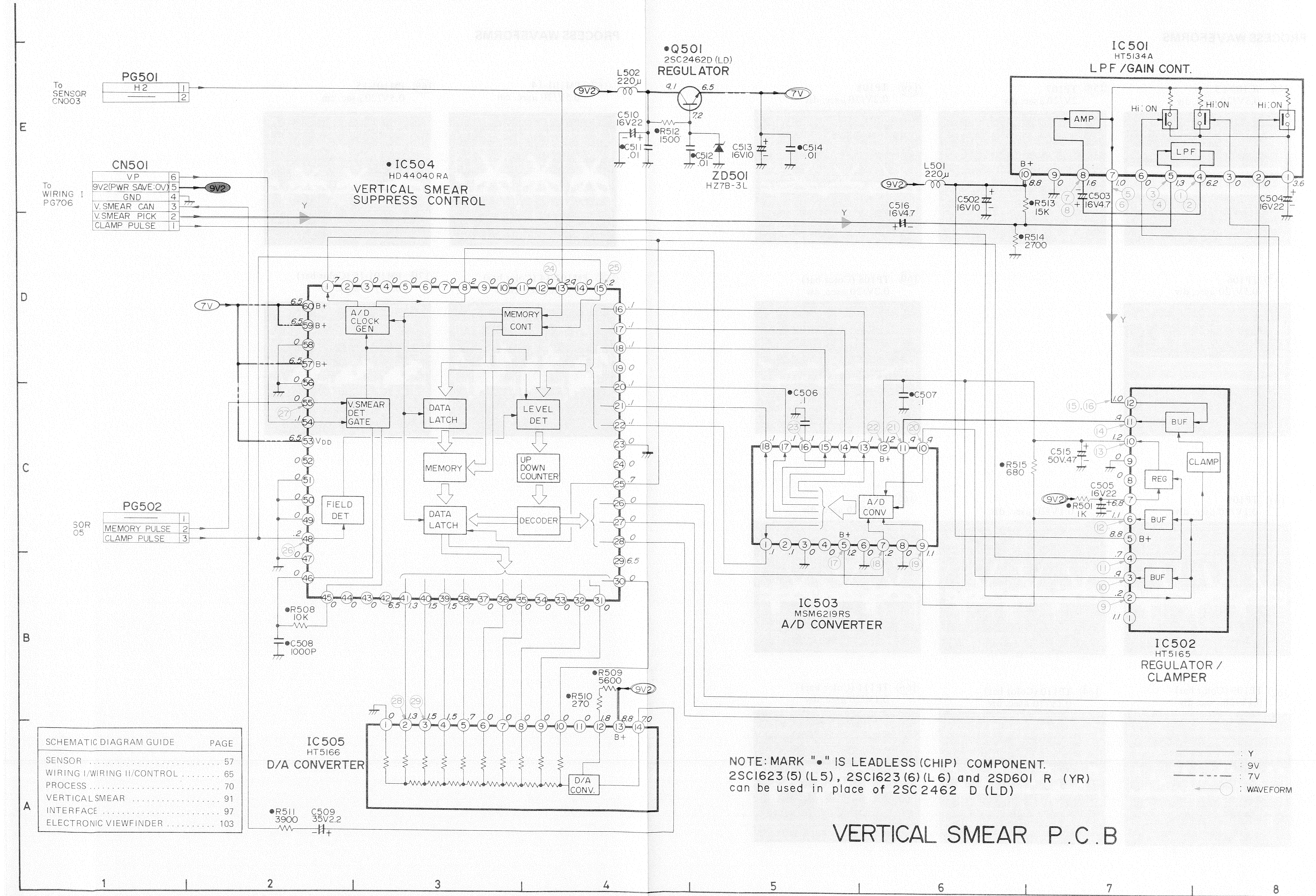


(168) PM101-14 (Color bar)
0.5V/20 μsec. cm



(170) PM101-15 (Color bar)
0.5V/20 μsec. cm





To SENSOR CN003
PG501
H2
To WIRING I PG706
CN501
VP
9V2(PWR SAVE:OV)
GND
V.SMEAR CAN
V.SMEAR PICK
CLAMP PULSE
SOR 05
PG502
MEMORY PULSE
CLAMP PULSE
•Q501
2SC2462D (LD)
REGULATOR
L502 220μ
C510 16V22
•C511 .01
R512 1500
•C512 .01
ZD501
HZ7B-3L
C513 16V10
•C514 .01
9V2
7V
•IC504
HD44040RA
VERTICAL SMEAR SUPPRESS CONTROL
A/D CLOCK GEN
MEMORY CONT
V.SMEAR DET GATE
DATA LATCH
LEVEL DET
MEMORY
UP DOWN COUNTER
FIELD DET
DATA LATCH
DECODER
VDD
B+
•R508 10K
•C508 1000P
•R509 5600
•R510 270
IC505
HT5166
D/A CONVERTER
D/A CONV.
•R511 3900
C509 35V2.2
L501 220μ
C502 16V10
•R513 15K
•R514 2700
C516 16V4.7
C503 16V4.7
C504 16V22
IC501
HT5134A
LPF/GAIN CONT.
AMP
LPF
Hi: ON
•C506 .1
•C507 .1
IC503
MSM6219RS
A/D CONVERTER
A/D CONV
•R515 680
C515 50V.47
C505 16V22
•R501 1K
IC502
HT5165
REGULATOR / CLAMPER
BUF
CLAMP
REG
Y
A
B
C
D
E
1
2
3
4
5
6
7
8
Y
9V
7V
WAVEFORM

SCHEMATIC DIAGRAM GUIDE	PAGE
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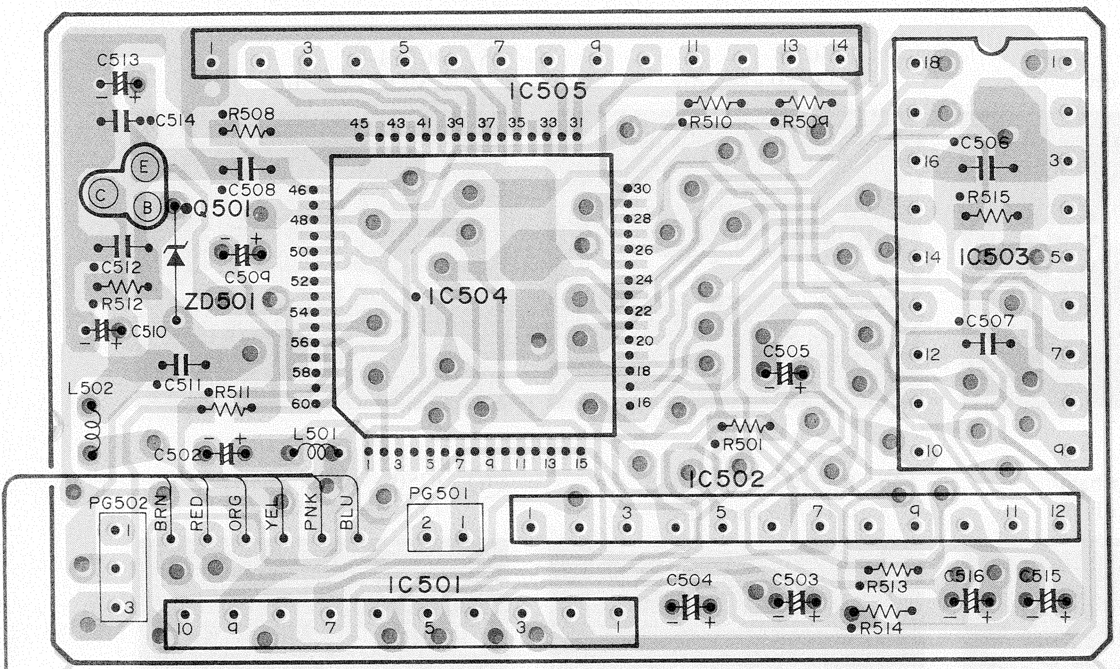
PROCESS	70
VERTICAL SMEAR	91
INTERFACE	97
ELECTRONIC VIEWFINDER	103

NOTE: MARK "•" IS LEADLESS (CHIP) COMPONENT.
2SC1623 (5) (L5), 2SC1623 (6) (L6) and 2SD601 R (YR)
can be used in place of 2SC2462 D (LD)

VERTICAL SMEAR P.C.B

VERTICAL SMEAR CIRCUIT BOARD


C513
C514
R508
C508
Q501
E
C
B
C512
R512
C509
ZD501
C510
C511
R511
L502
C502
L501
IC505
IC504
R510
R509
C506
R515
IC503
C507
C505
R501
IC502
PG502
BRN
RED
ORG
YEL
PNK
BLU
PG501
IC501
C504
C503
R513
R514
C516
C515

VERTICAL SMEAR P.C.B

CN501

Wire	Pin	Signal
BLU	6	VP
PNK	5	9V2 (PWR SAVE:0V)
YEL	4	GND
ORG	3	V. SMEAR CAN
RED	2	V. SMEAR PICK
BRN	1	CLAMP PULSE

To
WIRING I
PG706

PG501

1	H2
2	GND

To
SENSOR
CN003

PG502

1	GND
2	MEMORY PULSE
3	CLAMP PULSE

To
SENSOR
CN005

● : Through hole

▨ : Parts side

▨ : Soldered side

Note :
Mark "•" is leadless (CHIP) component.

IC501

1	3.6
2	0
3	0
4	6.2
5	1.3
6	0
7	1.0
8	1.6
9	0
10	8.8

IC502

12	1.0
11	0.9
10	1.2
9	0
8	0
7	6.8
6	1.1
5	8.8
4	0.7
3	0.9
2	0.2
1	1.1

IC505

14	7.0
13	8.8
12	1.8
11	0
10	0
9	0
8	0
7	0
6	0
5	0.7
4	1.5
3	1.5
2	1.3
1	0

IC503

18	0.1	1	0.1
17	0.1	2	0.1
16	0.1	3	0
15	0.1	4	0
14	0.1	5	1.2
13	0.1	6	0
12	1.2	7	0.2
11	0.9	8	0
10	0.9	9	1.1

Q501

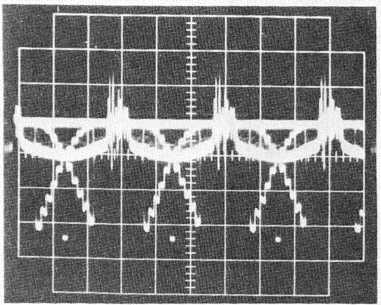
B	7.2
C	9.1
E	6.5

IC504

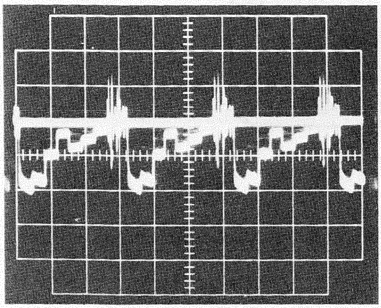
1	0.7	11	0	21	0.1	31	0	41	1.3	51	0
2	0	12	0	22	0.1	32	0	42	6.5	52	0
3	0	13	2.9	23	0	33	0	43	0	53	6.5
4	0	14	0	24	0	34	0	44	0	54	0.1
5	0	15	0.2	25	0.7	35	0	45	0	55	0
6	0	16	0.1	26	0	36	0	46	0	56	0
7	0	17	0.1	27	0	37	0	47	0	57	6.5
8	0.2	18	0.1	28	0	38	0.7	48	0.2	58	0
9	0	19	0	29	6.5	39	1.5	49	0	59	6.5
10	0	20	0.1	30	0	40	1.5	50	0	60	6.5

VERTICAL SMEAR WAVEFORMS

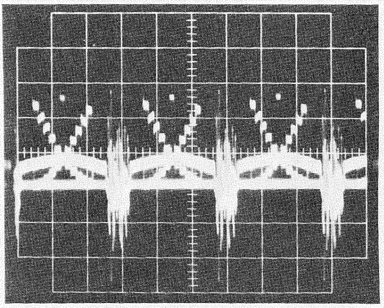
① IC501-4
0.2V/20 μsec. div



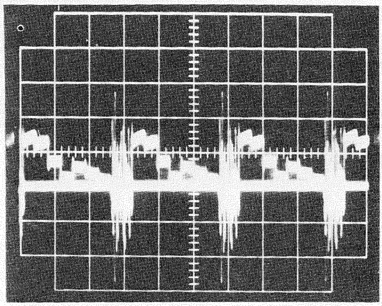
② IC501-4 (Color bar)
0.2V/20 μsec. div



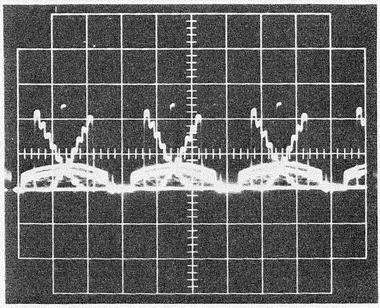
③ IC501-5
0.1V/20 μsec. div



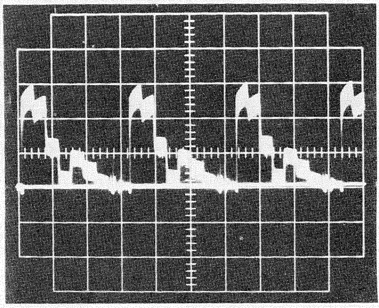
④ IC501-5 (Color bar)
0.1V/20 μsec. div



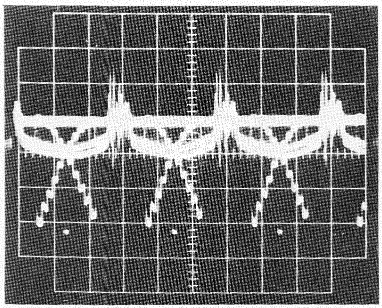
⑤ IC501-7
2V/20 μsec. div



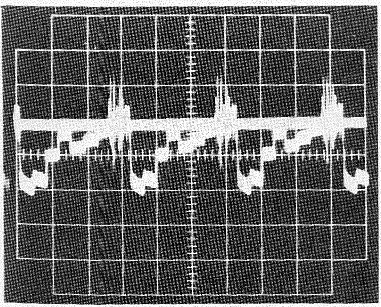
⑥ IC501-7 (Color bar)
1V/20 μsec. div



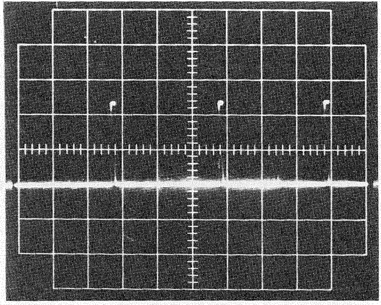
⑦ IC501-8
0.2V/20 μsec. div



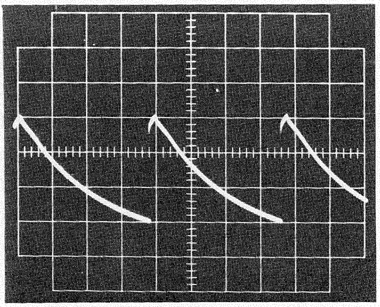
⑧ IC501-8 (Color bar)
0.2V/20 μsec. div



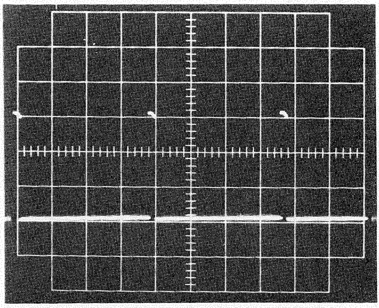
⑨ IC502-2
2V/20 μsec. div



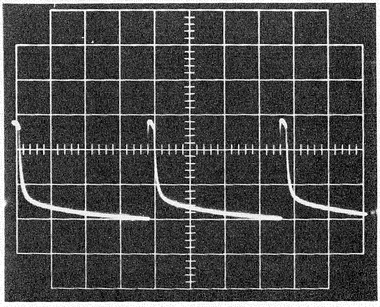
⑩ IC502-3
0.2V/5msec. div



⑪ IC502-4
2V/5msec. div

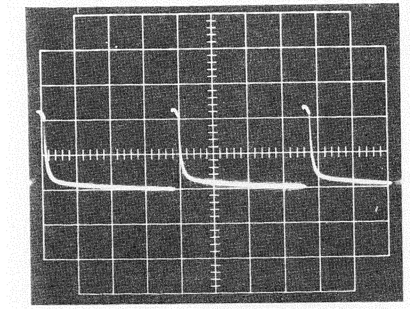


⑫ IC502-6
1V/5msec. div

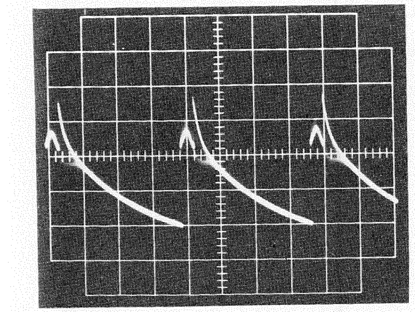


VERTICAL SMEAR WAVEFORMS

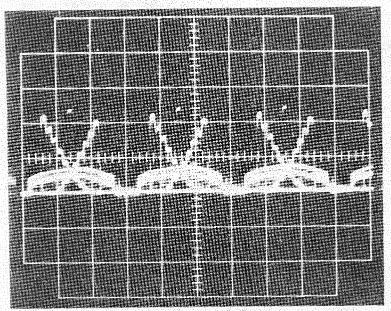
⑬ IC502-10
2V/5msec. div



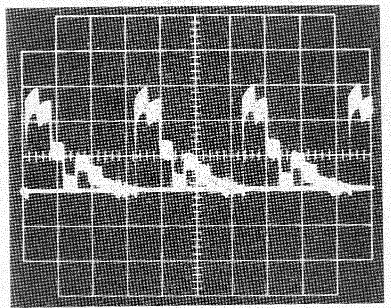
⑭ IC502-11
0.2V/5msec. div



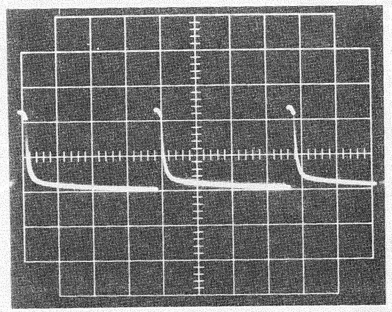
⑮ IC502-12
2V/20 μsec. div



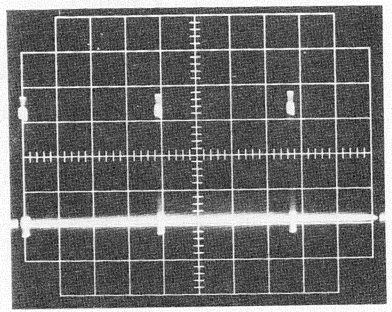
⑯ IC502-12 (Color bar)
1V/20 μsec. div



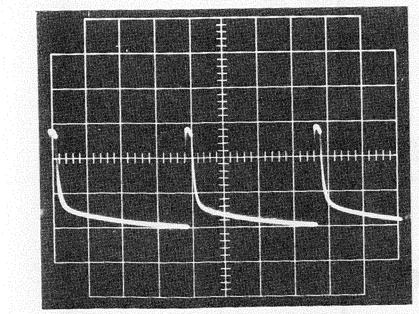
⑰ IC503-5
2V/5mV. div



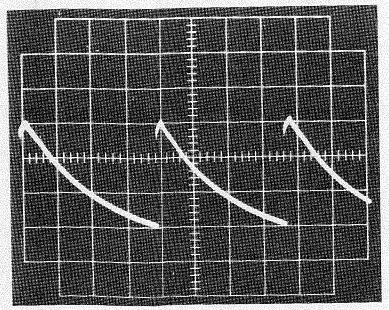
⑱ IC503-7
2V/5msec. div



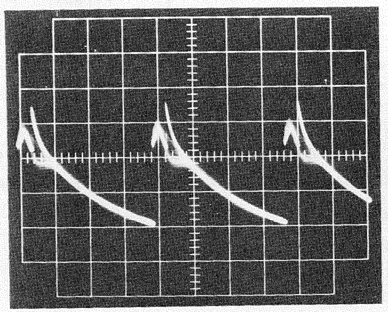
⑲ IC503-9
1V/5msec. div



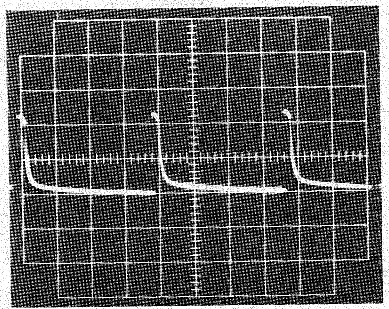
⑳ IC503-10
0.2V/5msec. div



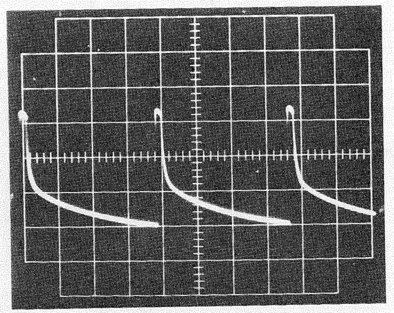
㉑ IC503-11
0.2V/5msec. div



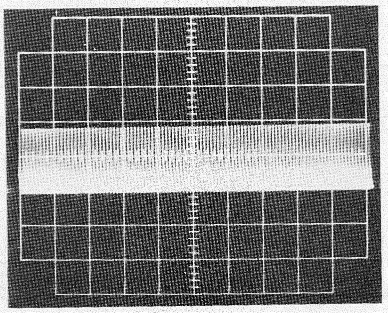
㉒ IC503-12
2V/5msec. div



㉓ IC503-16
0.5V/5msec. div

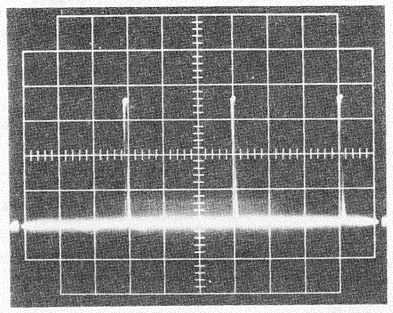


㉔ IC504-13
2V/2 μsec. div

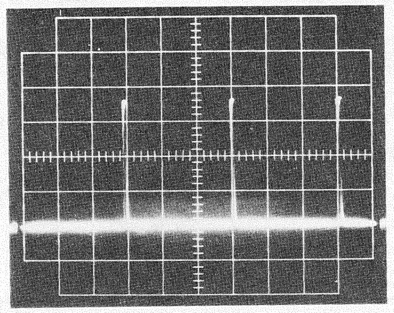


VERTICAL SMEAR WAVEFORMS

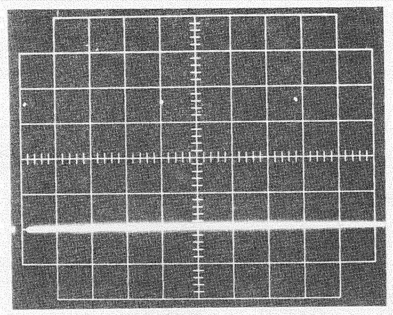
㉕ IC504-15
2V/20 μsec. div



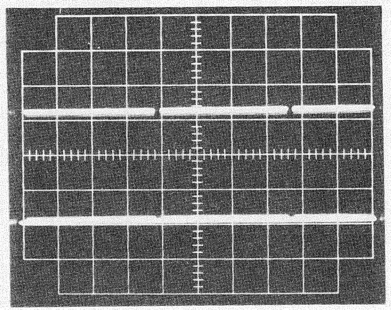
㉖ IC504-48
2V/20 μsec. div



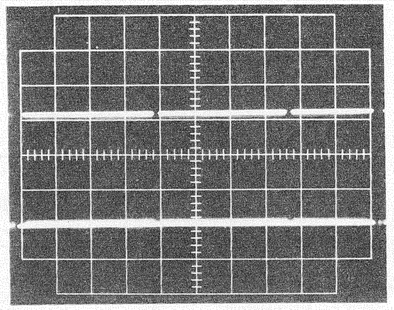
㉗ IC504-55
2V/5msec. cm



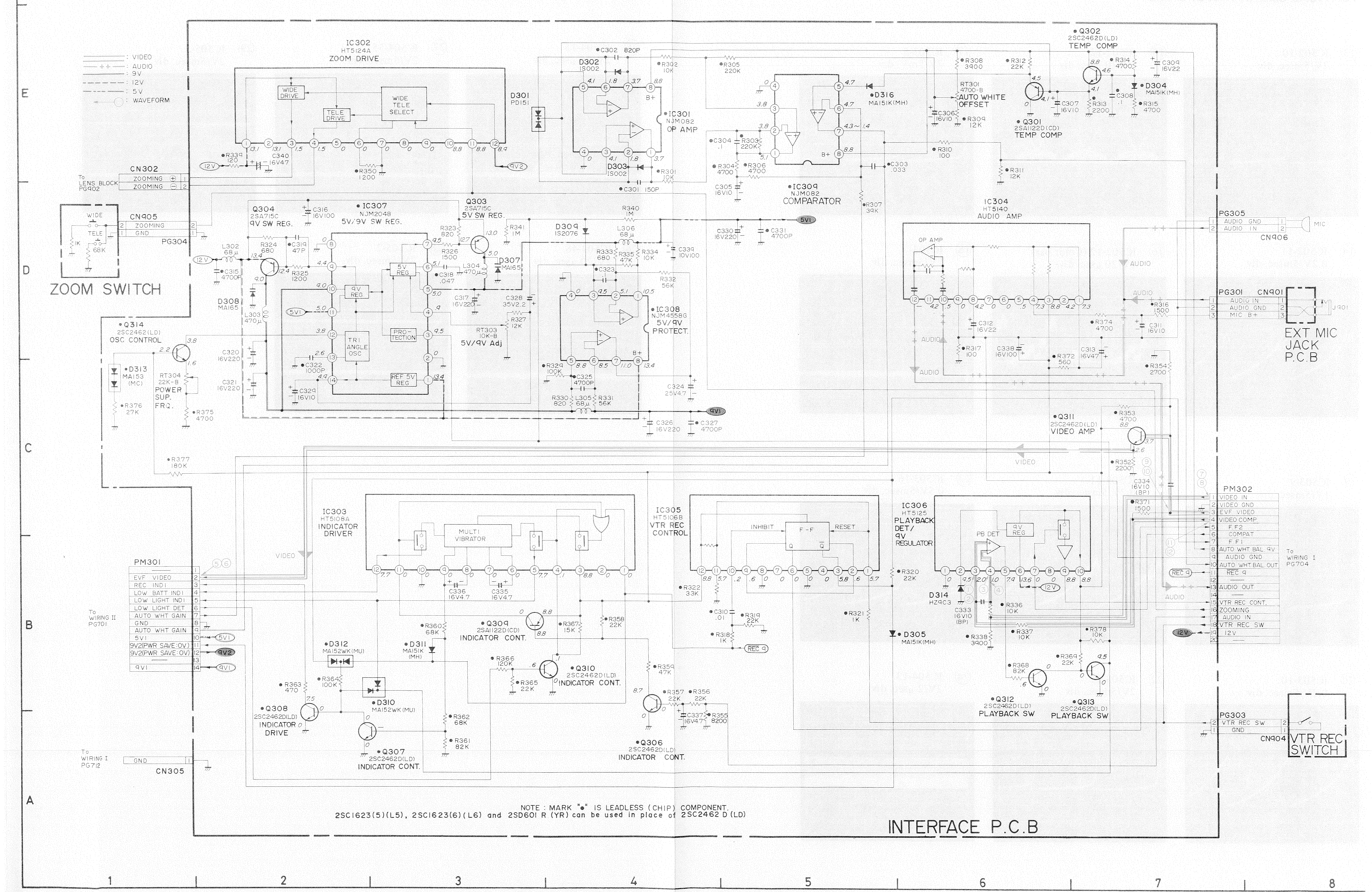
㉘ IC505-2
2V/5msec. div



㉙ IC505-3
2V/5msec. div

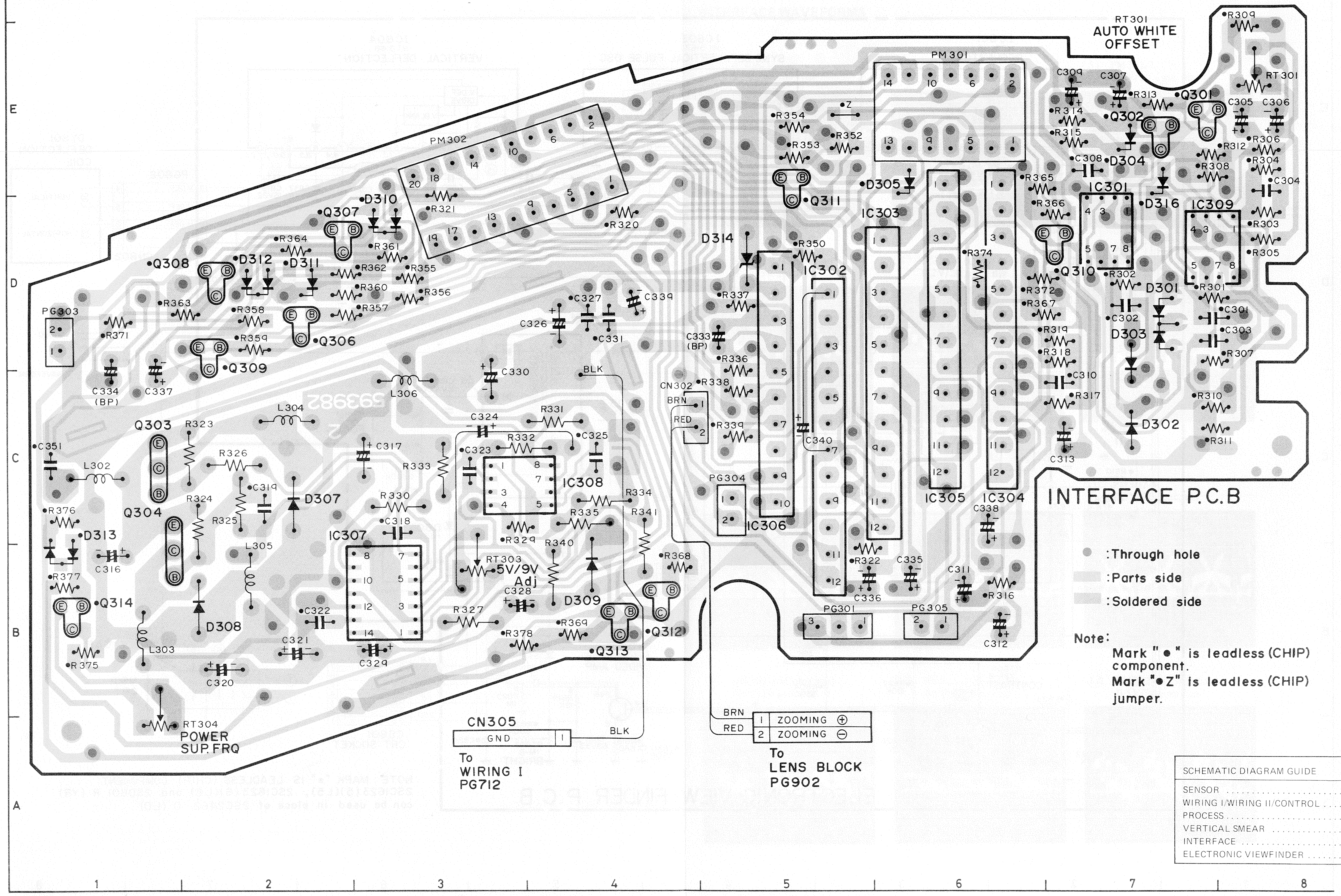


INTERFACE SCHEMATIC DIAGRAM


: VIDEO
: AUDIO
: 9V
: 12V
: 5V
: WAVEFORM
IC302
HT5124A
ZOOM DRIVE
WIDE DRIVE
TELE DRIVE
WIDE TELE SELECT
D301
PD151
D302
IS002
D303
IS002
IC301
NJM082
OP AMP
C302 820P
C301 150P
R302 10K
R301 10K
R305 220K
D316
MA151K(MH)
IC309
NJM082
COMPARATOR
R307 39K
C303 .033
R308 3900
RT301 4700-B
AUTO WHITE OFFSET
R309 12K
C306 16V10
R310 100
R311 12K
R312 22K
Q301
2SA1122D(CD)
TEMP COMP
Q302
2SC2462D(LD)
TEMP COMP
R313 2200
C307 16V10
C308 .1
R314 4700
C309 16V22
D304
MA151K(MH)
R315 4700
CN302
ZOOMING
To LENS BLOCK PG902
R339 120
C340 16V47
R350 1200
ZOOM SWITCH
WIDE
TELE
1K
68K
CN905
ZOOMING
GND
PG304
Q304
2SA715C
9V SW REG.
IC307
NJM2048
5V/9V SW REG.
Q303
2SA715C
5V SW REG.
C316 16V100
R324 680
C319 47P
R325 1200
L302 68μ
C315 4700P
D308
MA165
L303 470μ
9V REG
5V REG
TRI ANGLE OSC
PRO-TECTION
REF 5V REG
C320 16V220
C321 16V220
C322 1000P
C329 16V10
R323 820
R326 1500
L304 470μ
D307
MA165
C318 .047
C317 16V220
C328 35V2.2
RT303 10K-B
R327 12K
5V/9V Adj
R341 1M
D309
IS2076
R340 1M
L306 68μ
R333 680
R335 47K
R334 10K
C339 10V100
C323
R332 56K
IC308
NJM4558G
5V/9V PROTECT.
R329 100K
C325 4700P
R330 820
L305 68μ
R331 56K
C324 25V4.7
C326 16V220
C327 4700P
C330 16V220
C331 4700P
C304 .1
R303 220K
R304 4700
R306 4700
C305 16V10
Q314
2SC2462(LD)
OSC CONTROL
D313
MA153 (MC)
RT304 22K-B
POWER SUP. FRQ.
R376 27K
R375 4700
R377 180K
IC304
HT5140
AUDIO AMP
OP AMP
C312 16V22
R317 100
C338 16V100
R372 560
C313 16V47
R374 4700
R316 1500
C311 16V10
R354 2700
PG305
AUDIO GND
AUDIO IN
CN906
MIC
PG301
CN901
AUDIO IN
AUDIO GND
MIC B+
J901
EXT MIC JACK P.C.B
Q311
2SC2462D(LD)
VIDEO AMP
R353 4700
R352 2200
C334 16V10 (BP)
R371 1500
PM302
VIDEO IN
VIDEO GND
EVF VIDEO
VIDEO COMP.
F.F2
COMPAT
F.F1
AUTO WHT BAL 9V
AUDIO GND
AUTO WHT BAL OUT
REC 9
AUDIO OUT
VTR REC CONT.
ZOOMING
AUDIO IN
VTR REC SW
12V
To WIRING I PG704
IC303
HT5108A
INDICATOR DRIVER
MULTI VIBRATOR
C336 16V4.7
C335 16V4.7
IC305
HT5106B
VTR REC CONTROL
INHIBIT
F-F
RESET
R322 33K
C310 .01
R319 22K
R318 1K
R320 22K
R321 1K
D305
MA151K(MH)
IC306
HT5125
PLAYBACK DET/ 9V REGULATOR
PB DET
9V REG
D314
HZ9C3
C333 16V10 (BP)
R336 10K
R337 10K
R338 3900
R378 10K
R369 22K
R368 82K
Q312
2SC2462D(LD)
PLAYBACK SW
Q313
2SC2462D(LD)
PLAYBACK SW
PG303
VTR REC SW
GND
CN904
VTR REC SWITCH
PM301
EVF VIDEO
REC INDI
LOW BATT INDI
LOW LIGHT INDI
LOW LIGHT DET
AUTO WHT GAIN
GND
AUTO WHT GAIN
5V1
9V2(PWR SAVE:OV)
9V1
To WIRING II PG701
Q309
2SA1122D(CD)
INDICATOR CONT.
R360 68K
R367 15K
R358 22K
D312
MA152WK(MU)
D311
MA151K (MH)
R366 120K
R365 22K
Q310
2SC2462D(LD)
INDICATOR CONT.
R359 47K
R363 470
R364 100K
D310
MA152WK(MU)
Q308
2SC2462D(LD)
INDICATOR DRIVE
Q307
2SC2462D(LD)
INDICATOR CONT.
R362 68K
R361 82K
R357 22K
R356 22K
C337 16V47
R355 8200
Q306
2SC2462D(LD)
INDICATOR CONT.
To WIRING I PG712
GND
CN305
INTERFACE P.C.B
E
D
C
B
A
1
2
3
4
5
6
7
8

NOTE : MARK "•" IS LEADLESS (CHIP) COMPONENT.
2SC1623(5)(L5), 2SC1623(6)(L6) and 2SD601 R (YR) can be used in place of 2SC2462 D (LD)

INTERFACE CIRCUIT BOARD


INTERFACE P.C.B
RT301
AUTO WHITE OFFSET
PM301
PM302
IC301
IC302
IC303
IC304
IC305
IC306
IC307
IC308
IC309
Q301
Q302
Q303
Q304
Q306
Q307
Q308
Q309
Q310
Q311
Q312
Q313
Q314
D301
D302
D303
D304
D305
D307
D308
D309
D310
D311
D312
D313
D314
D316
RT303
5V/9V Adj
RT304
POWER SUP. FRQ
PG301
PG303
PG304
PG305
CN302
BRN
RED
BLK
L302
L303
L304
L305
L306
C301
C302
C303
C304
C305
C306
C307
C308
C309
C310
C311
C312
C313
C316
C317
C318
C319
C320
C321
C322
C323
C324
C325
C326
C327
C328
C329
C330
C331
C333 (BP)
C334 (BP)
C335
C336
C337
C338
C339
C340
C351
R301
R302
R303
R304
R305
R306
R307
R308
R309
R310
R311
R312
R313
R314
R315
R316
R317
R318
R319
R320
R321
R322
R323
R324
R325
R326
R327
R329
R330
R331
R332
R333
R334
R335
R336
R337
R338
R339
R340
R341
R350
R352
R353
R354
R355
R356
R357
R358
R359
R360
R361
R362
R363
R364
R365
R366
R367
R368
R369
R371
R372
R374
R375
R376
R377
R378
Z
E
B
C
593982
CN305
GND
To WIRING I PG712
1 ZOOMING ⊕
2 ZOOMING ⊖
To LENS BLOCK PG902
A
B
C
D
E
1
2
3
4
5
6
7
8

● :Through hole

▨ :Parts side

▨ :Soldered side

Note:

Mark "●" is leadless (CHIP) component.

Mark "●Z" is leadless (CHIP) jumper.

SCHEMATIC DIAGRAM GUIDE

- SENSOR ....
- WIRING I/WIRING II/CONTROL ....
- PROCESS ....
- VERTICAL SMEAR ....
- INTERFACE ....
- ELECTRONIC VIEWFINDER ....

PG304

1	GND
2	ZOOMING

To
ZOOM SWITCH
CN905

PG305

1	AUDIO GND	1
2	AUDIO IN	2

To
MIC
CN906

PM301

1	———
2	EVF VIDEO
3	REC INDI.
4	LOW BATT INDI.
5	LOW LIGHT INDI.
6	LOW LIGHT DET.
7	AUTO WHT GAIN
8	GND
9	AUTO WHT GAIN
10	5V1
11	9V2(PWR SAVE:OV)
12	9V2(PWR SAVE:OV)
13	———
14	9V1

To
WIRING II
PG701

PM302

1	VIDEO IN
2	VIDEO GND
3	EVF VIDEO
4	VIDEO COMP
5	F. F2
6	COMPAT
7	F. F1
8	AUTO WHT. BAL 9V
9	AUDIO GND
10	AUTO WHT. BAL OUT
11	$\overline{\text{REC}}$ 9V
12	———
13	AUDIO OUT
14	———
15	VTR REC CONT.
16	ZOOMING
17	AUDIO IN
18	VTR REC SW
19	12V
20	———

To
WIRING I
PG704

PG301

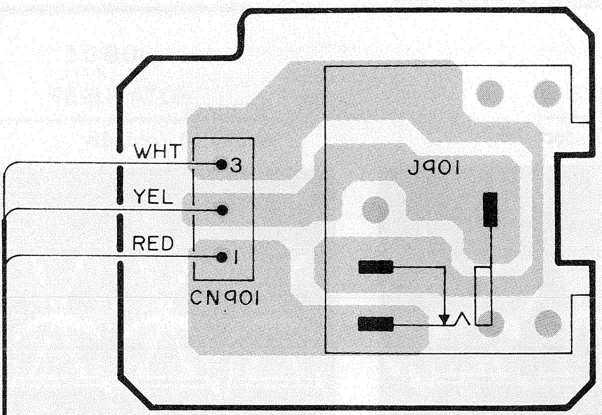
1	AUDIO IN
2	AUDIO GND
3	MIC B+

To
EXT MIC JACK
CN901

PG303

2	VTR REC SW
1	GND

To
VTR REC SW
CN904



EXT MIC JACK P.C.B

CN901

RED	1	AUDIO IN
YEL	2	AUDIO GND
WHT	3	MIC B+

To
INTERFACE
PG301

IC301

4	3	2	1
0	4.1	1.8	3.7
5	6	7	8
4.1	1.8	3.7	8.8

IC309

4	3	2	1
0	3.8	3.8	5.1
5	6	7	8
4.7	4.7	4.3~1.4	8.8

IC305

1	5.7
2	0.6
3	5.8
4	0
5	0
6	0
7	0
8	0
9	0.6
10	0.2
11	5.7
12	8.8

IC306

1	0
2	9.5
3	2.0
4	1.0
5	7.9
6	13.6
7	0
8	0
9	8.8
10	8.8

IC302

1	13.1
2	13.1
3	1.5
4	1.5
5	0
6	0
7	0
8	0
9	0
10	8.8
11	8.8
12	8.9

IC303

1	0
2	0
3	8.8
4	0.1
5	7.7
6	0
7	0
8	0
9	0
10	0
11	0
12	7.7

IC304

1	7.3
2	4.2
3	8.8
4	7.3
5	0.5
6	0
7	0
8	4.2
9	0
10	0.5
11	4.2
12	—

Q301

B	4.1
C	0
E	4.5

Q304

B	12.4
C	9.0
E	13.4

Q312

B	0.6
C	0
E	0

IC307

8	0	7	9.5
9	4.4	6	5.1
10	9.0	5	5.0
11	5.0	4	0.9
12	3.8	3	9.5
13	2.6	2	0
14	4.9	1	13.4

Q306

B	0
C	8.7
E	0

Q309

B	8.8
C	0
E	8.8

Q302

B	4.6
C	8.8
E	4.1

Q310

B	0.6
C	0.1
E	0

Q313

B	0
C	9.5
E	0

Q307

B	—
C	0
E	0

Q303

B	12.7
C	5.0
E	13.0

Q311

B	3.7
C	8.8
E	2.6

Q314

B	2.2
C	3.8
E	1.6

IC308

1	10.5	8	13.4
2	5.1	7	11.0
3	9.5	6	8.5
4	0	5	8.8

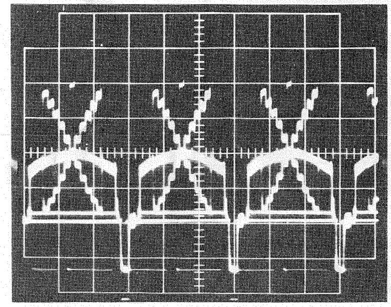
Q308

B	0
C	7.5
E	0

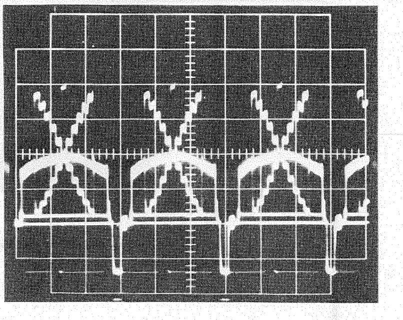
AGE
. 57
. 65
. 70
. 91
. 97
103

INTERFACE WAVEFORMS

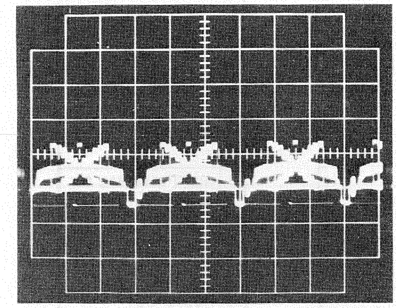
① IC306-3
0.2V/20 μsec. div



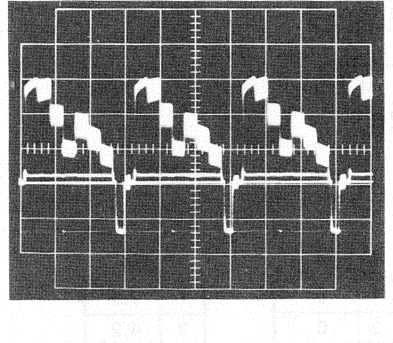
③ IC306-4
0.2V/20 μsec. div



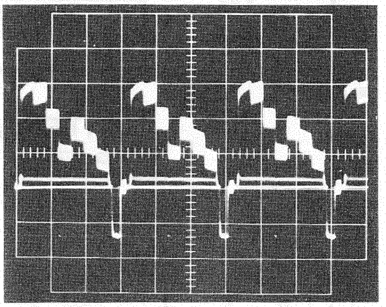
⑤ PM301-2
0.5V/20 μsec. cm



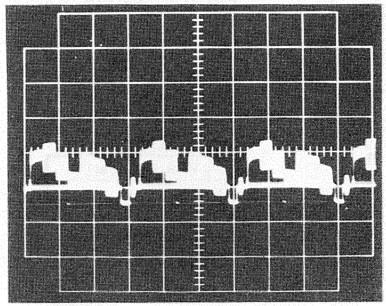
② IC306-3 (Color bar)
0.2V/20 μsec. div



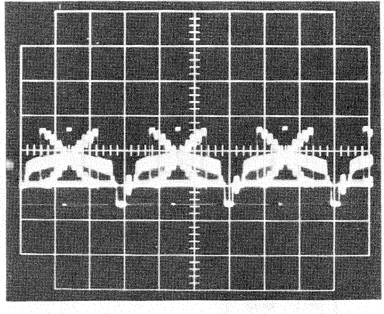
④ IC306-4 (Color bar)
0.2V/20 μsec. div



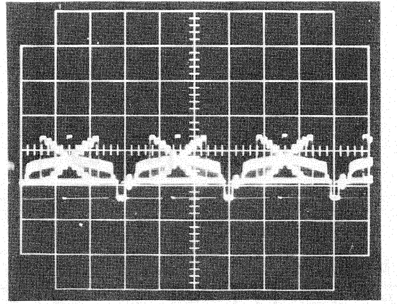
⑥ PM301-2 (Color bar)
0.5V/20 μsec. cm



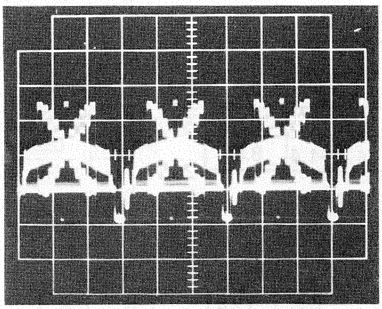
⑦ PM302-1
0.5V/20 μsec. cm



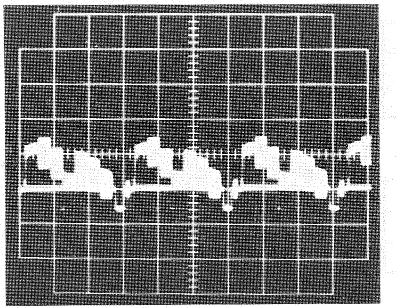
⑨ PM302-3
0.5V/20 μsec. cm



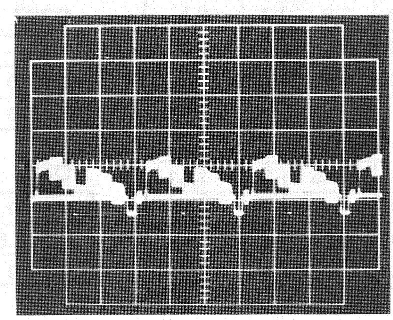
⑪ PM302-4
0.5V/20 μsec. cm



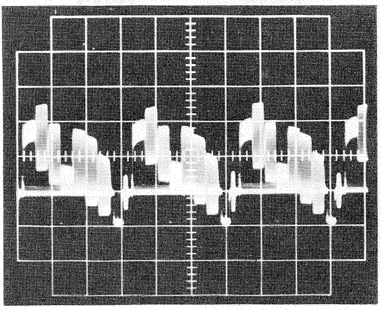
⑧ PM302-1 (Color bar)
0.5V/20 μsec. cm



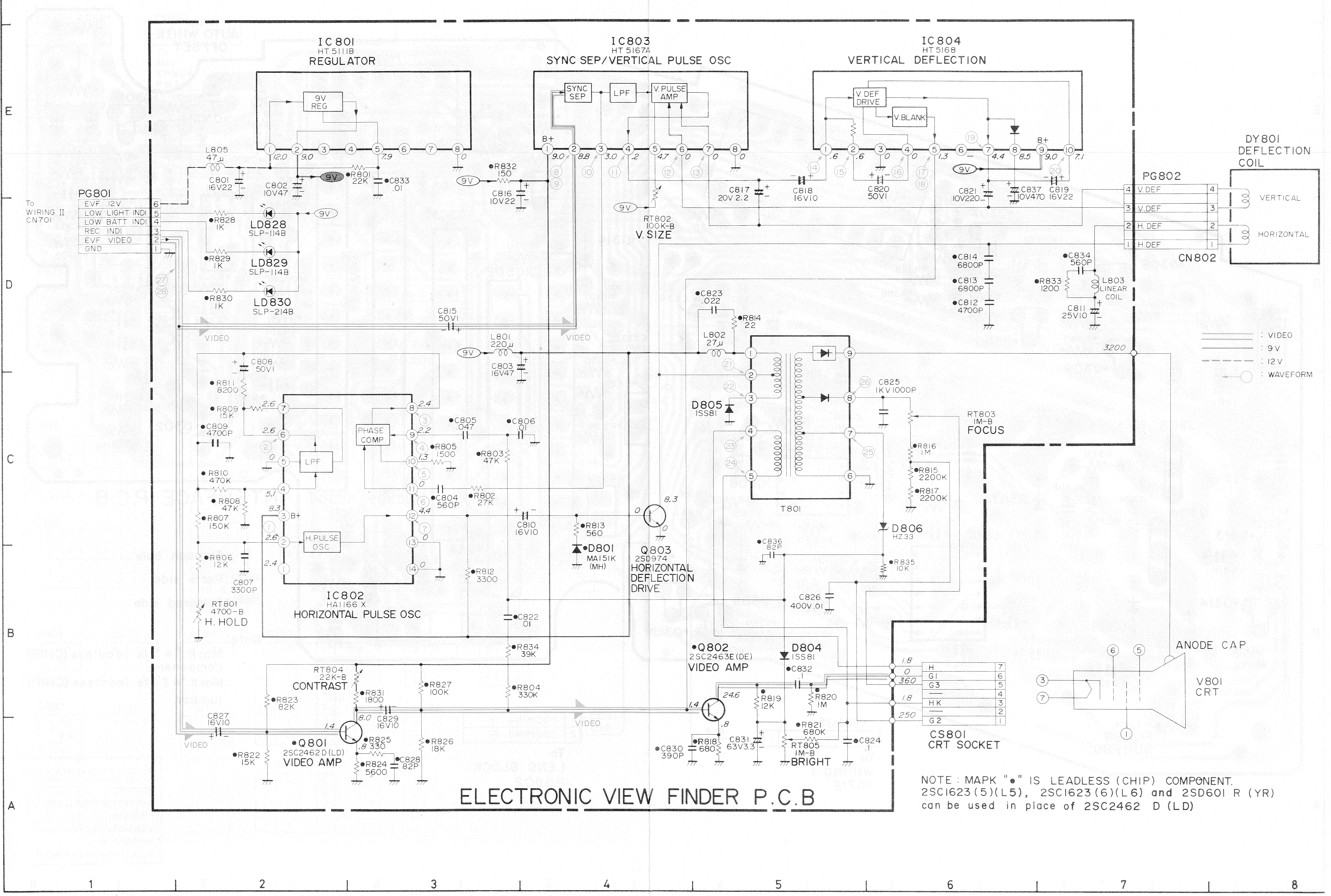
⑩ PM302-3 (Color bar)
0.5V/20 μsec. cm



⑫ PM302-4 (Color bar)
0.5V/20 μsec. cm



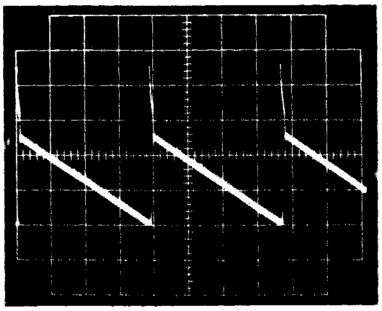
ELECTRONIC VIEWFINDER SCHEMATIC DIAGRAM


IC801
HT5111B
REGULATOR
9V REG
IC803
HT5167A
SYNC SEP/VERTICAL PULSE OSC
SYNC SEP
LPF
V.PULSE AMP
IC804
HT5168
VERTICAL DEFLECTION
V.DEF DRIVE
V.BLANK
B+
DY801
DEFLECTION COIL
VERTICAL
HORIZONTAL
PG802
V.DEF
V.DEF
H.DEF
H.DEF
CN802
To WIRING II CN701
PG801
EVF 12V
LOW LIGHT INDI
LOW BATT INDI
REC INDI
EVF VIDEO
GND
L805 47μ
C801 16V22
C802 10V47
R801 22K
C833 .01
R832 150
C816 10V22
9V
R828 1K
LD828 SLP-114B
R829 1K
LD829 SLP-114B
R830 1K
LD830 SLP-214B
C815 50V1
VIDEO
C817 20V2.2
RT802 100K-B
V. SIZE
C818 16V10
C820 50V1
C821 10V220
C837 10V470
C819 16V22
C814 6800P
C813 6800P
C812 4700P
C834 560P
R833 1200
L803 LINEAR COIL
C811 25V10
C823 .022
R814 22
L802 27μ
L801 220μ
C803 16V47
C808 50V1
R811 8200
R809 15K
C809 4700P
R810 470K
R808 47K
R807 150K
R806 12K
C807 3300P
RT801 4700-B
H. HOLD
PHASE COMP
LPF
H.PULSE OSC
IC802
HA1166X
HORIZONTAL PULSE OSC
C805 .047
C806 .01
R805 1500
R803 47K
C804 560P
R802 27K
C810 16V10
R813 560
D801 MA151K (MH)
Q803 2SD974
HORIZONTAL DEFLECTION DRIVE
R812 3300
C822 .01
R834 39K
R804 330K
D805 1SS81
T801
C825 1KV 1000P
RT803 1M-B
FOCUS
R816 1M
R815 2200K
R817 2200K
D806 HZ33
C836 82P
R835 10K
C826 400V .01
3200
VIDEO
9V
12V
WAVEFORM
Q802 2SC2463E(DE)
VIDEO AMP
D804 1SS81
C832 .1
R819 12K
R820 1M
R821 680K
RT805 1M-B
BRIGHT
C824 .1
C830 390P
R818 680
C831 63V3.3
RT804 22K-B
CONTRAST
R823 82K
R831 1800
C829 16V10
R827 100K
R826 18K
C827 16V10
R822 15K
Q801 2SC2462D(LD)
VIDEO AMP
R825 330
R824 5600
C828 82P
H
G1
G3
HK
G2
CS801
CRT SOCKET
ANODE CAP
V801 CRT
ELECTRONIC VIEW FINDER P.C.B
E
D
C
B
A
1
2
3
4
5
6
7
8

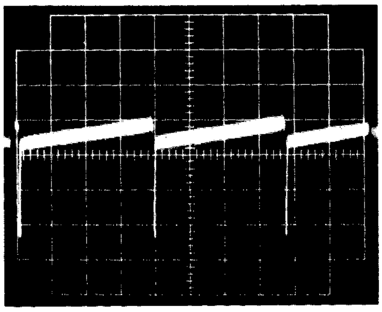
NOTE : MAPK "•" IS LEADLESS (CHIP) COMPONENT.
2SC1623(5)(L5), 2SC1623(6)(L6) and 2SD601 R (YR) can be used in place of 2SC2462 D (LD)

ELECTRONIC VIEWFINDER WAVEFORMS

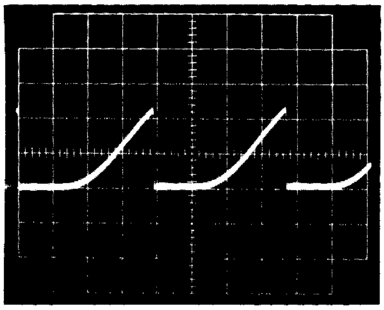
⑫ IC803-6
2V/5msec. div



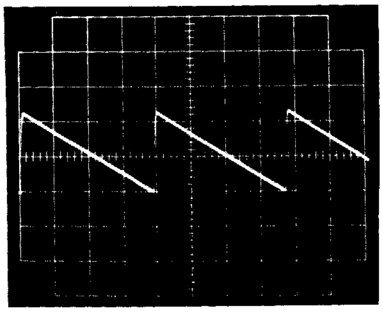
⑭ IC804-1
50mV/5msec. div



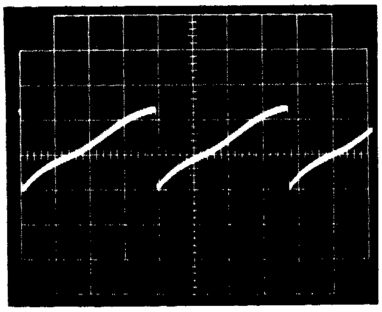
⑯ IC804-4
0.1V/5msec. div



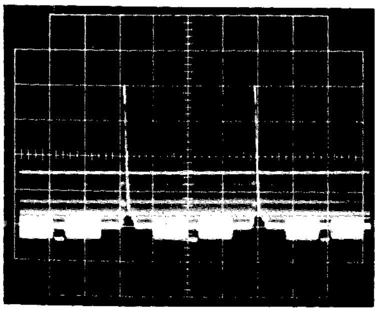
⑬ IC803-7
0.2V/5msec. div



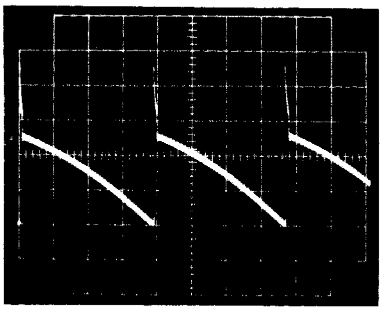
⑮ IC804-2
0.1V/5msec. div



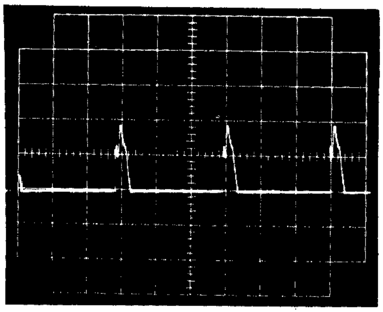
⑰ IC804-5
0.5V/5msec. cm



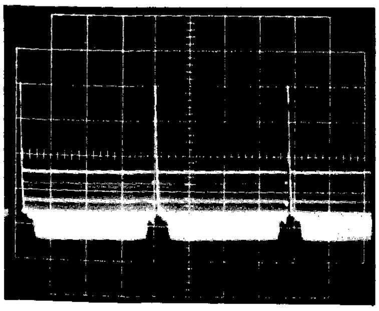
⑲ IC804-7
2V/5msec. div



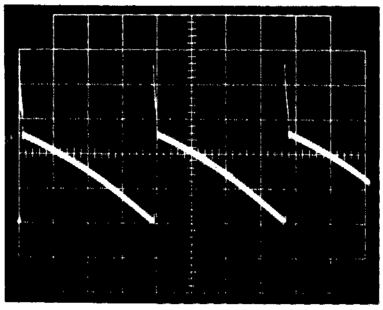
㉑ T801-2
50V/20 μsec. div



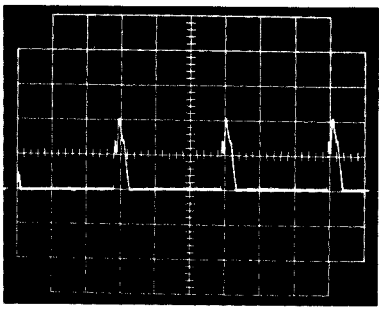
⑱ IC804-5 (Color bar)
0.5V/5msec. cm



⑳ IC804-10
2V/5msec. div

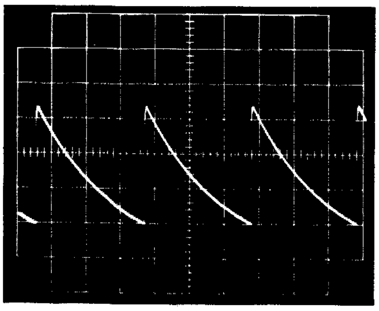


㉒ T801-3
50V/20 μsec. div

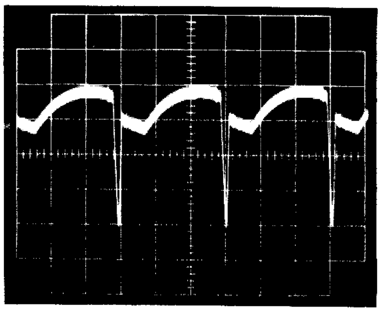


ELECTRONIC VIEWFINDER WAVEFORMS

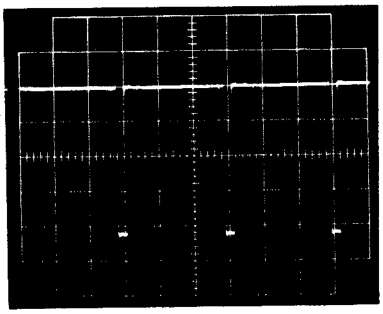
① IC802-2
1V/20 μsec. div



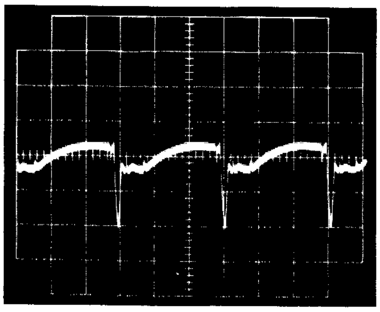
③ IC802-8
50mV/20 μsec. div



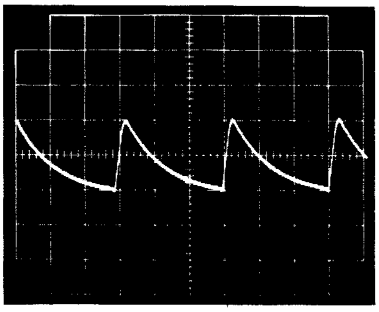
⑤ IC802-10
0.2V/20 μsec. div



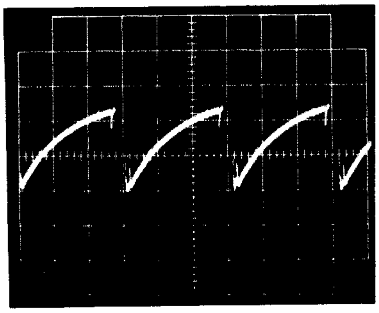
② IC802-6
50mV/20 μsec. div



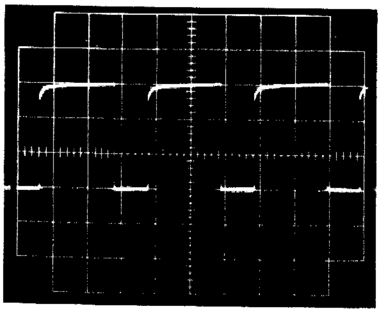
④ IC802-9
0.2V/20 μsec. div



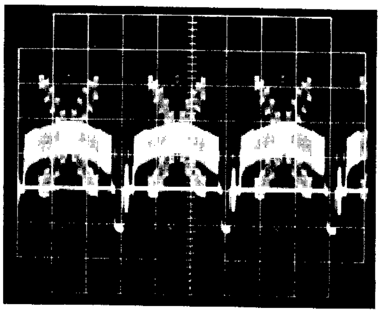
⑥ IC802-11
0.2V/20 μsec. div



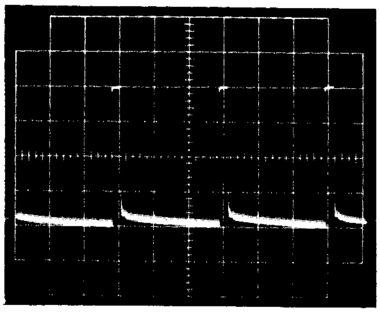
⑦ IC802-12
1V/20 μsec. div



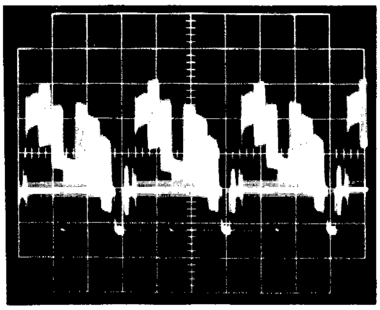
⑧ IC803-2
0.2V/20 μsec. div



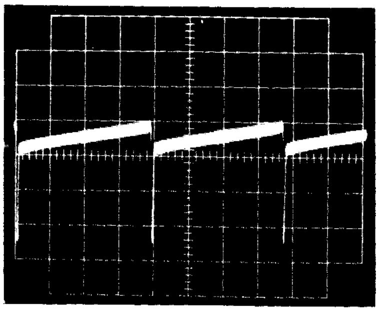
⑩ IC803-3
2V/20 μsec. div



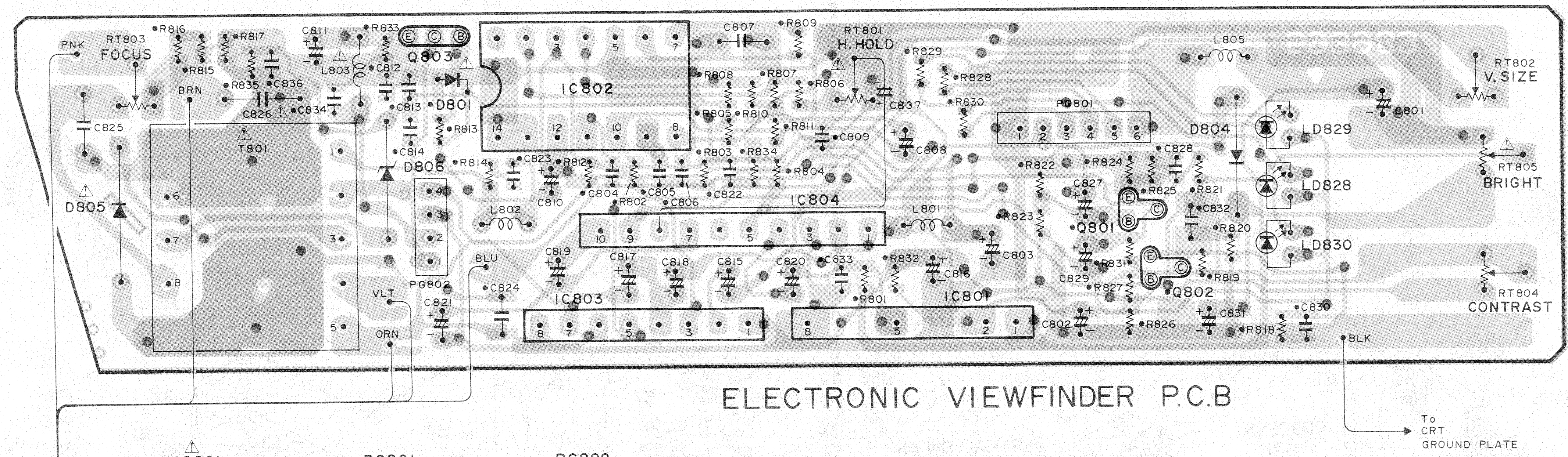
⑨ IC803-2 (Color bar)
0.2V/20 μsec. div



⑪ IC803-4
50mV/5msec. div



ELECTRONIC VIEWFINDER CIRCUIT BOARD


PNK
RT803
FOCUS
R816
R815
R817
BRN
R835
C836
C826
C834
C811
L803
R833
Q803
E C B
C812
C813
D801
R813
C814
D806
R814
C823
R812
C810
IC802
C807
R809
R808
R807
R806
R805
R810
R811
C809
R803
R834
R804
C804
C805
R802
C806
C822
IC804
RT801
H. HOLD
R829
R828
R830
C837
C808
PG801
L805
RT802
V. SIZE
C801
D804
LD829
LD828
LD830
RT805
BRIGHT
RT804
CONTRAST
R822
R824
C828
C827
R825
R821
C832
R823
Q801
R820
L801
C803
R831
R819
Q802
C829
R827
R826
C830
C831
R818
BLK
C825
T801
D805
PG802
L802
BLU
C824
VLT
C821
ORN
C819
C817
C818
C815
IC803
C820
C833
R832
C816
R801
IC801
C802
ELECTRONIC VIEWFINDER P.C.B
To CRT GROUND PLATE

CS801 ⚠

VLT	7	H
BLU	6	G1
PNK	5	G3
	4	——
ORN	3	HK
	2	——
BRN	1	G2

To
CRT

PG801

6	EVF 12V
5	LOW LIGHT INDI.
4	LOW BATT INDI.
3	REC INDI
2	EVF VIDEO
1	GND

To
WIRING II
CN701

PG802

4	V. DEF
3	V. DEF
2	H. DEF
1	H. DEF

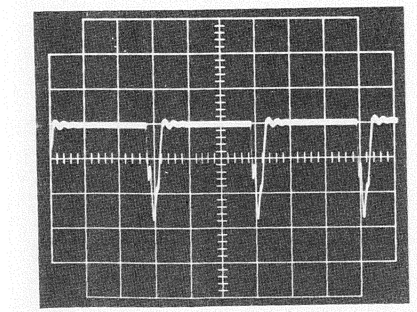
To
DEFLECTION
COIL
CN802

▨ : Soldered side ░ : Parts side ● : Through hole

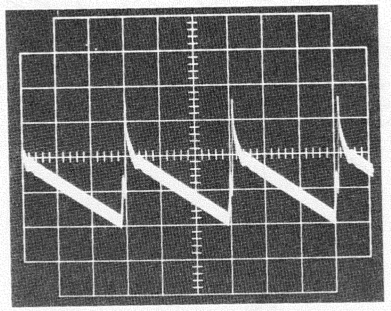
Note:
Mark " ● " is leadless (CHIP) component.

SCHEMATIC DIAGRAM GUIDE	PAGE
SENSOR	57
WIRING I/WIRING II/CONTROL	65
PROCESS	70
VERTICAL SMEAR	91
INTERFACE	97
ELECTRONIC VIEWFINDER	103

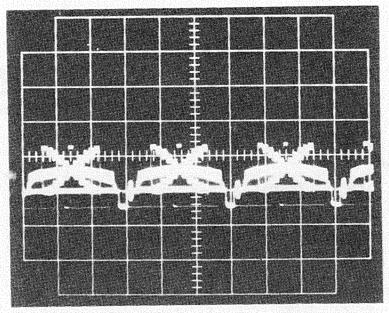
㉓ T801-4
1V/20 μsec. div



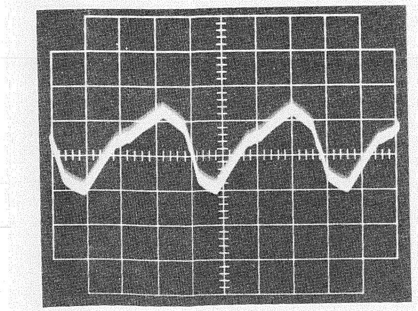
㉖ T801-6
2V/20 μsec. div



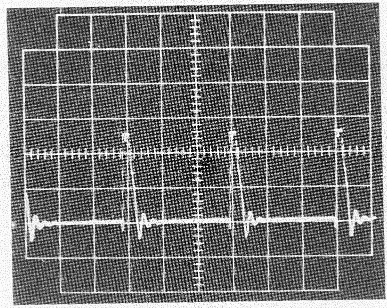
㉗ PG801
0.5V/20 μsec. cm



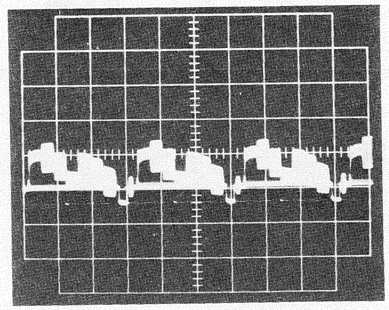
㉔ T801-5
50mV/20 μsec. div



㉕ T801-7
20V/20 μsec. div



㉘ PG801-2 (Color bar)
0.5V/20 μsec. cm



IC801

1	12.0
2	9.0
3	——
4	——
5	7.9
6	——
7	——
8	0

IC803

1	9.0
2	8.8
3	3.0
4	0.2
5	4.7
6	0
7	0
8	0

IC804

1	0.6
2	0.6
3	0
4	0
5	1.3
6	——
7	4.4
8	8.5
9	9.0
10	7.1

Q801

B	1.4
C	8.0
E	0.8

Q802

B	1.4
C	24.6
E	0.8

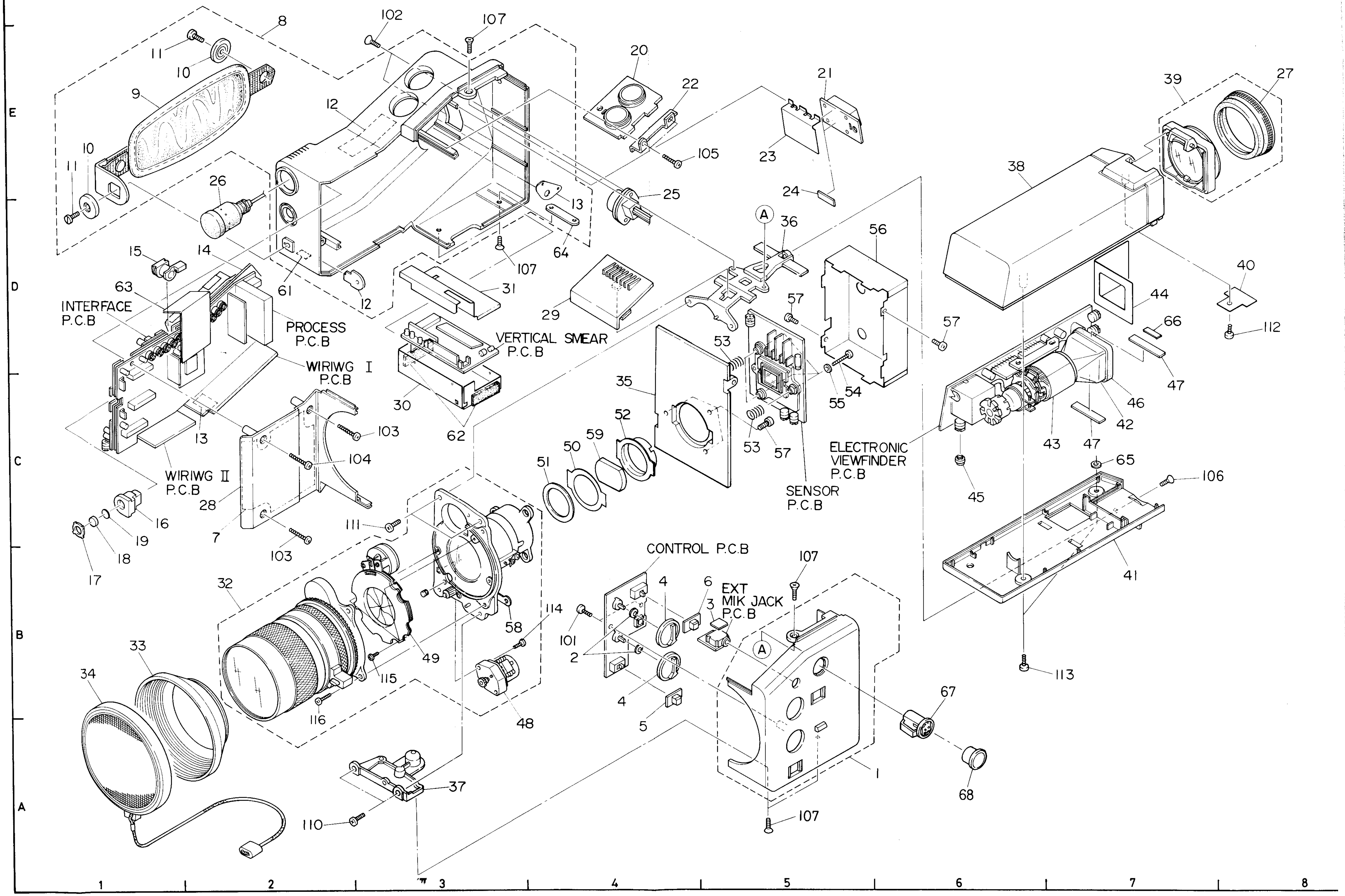
Q803

B	0
C	8.3
E	0

IC802

7	2.6	8	2.4
6	2.6	9	2.2
5	0	10	1.3
4	5.1	11	0
3	8.3	12	4.4
2	2.6	13	0
1	2.4	14	0

EXPLODED VIEW


8
102
107
11
10
9
12
20
22
21
39
27
10
11
26
25
105
23
38
13
24
A
36
56
40
15
14
63
61
12
107
64
31
29
INTERFACE P.C.B
PROCESS P.C.B
VERTICAL SMEAR P.C.B
57
57
44
66
112
WIRIWG I P.C.B
53
54
55
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103
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43
47
ELECTRONIC VIEWFINDER P.C.B
65
106
WIRIWG II P.C.B
28
SENSOR P.C.B
45
16
19
7
111
18
103
17
CONTROL P.C.B
107
41
32
4
6
EXT MIK JACK P.C.B
3
33
58
101
114
34
49
A
2
115
113
116
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48
5
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37
68
110
107
E
D
C
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REPLACEMENT PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
CT001	5058092	TRIMMER 40PF
CT101	5058092	TRIMMER 40PF
CT102	5058484	TRIMMER 20PF
CT103	5058092	TRIMMER 40PF
C001	0256402	TANTALUM ELECTROLYTIC 22UF 10V
C002	0256180	ELECTROLYTIC 1UF, 50V
C003-008	0256471	TANTALUM ELECTROLYTIC 10UF 6.3V
C009	0256407	TANTALUM 47UF 10V
C010	0256467	TANTALUM 3.3UF 16V
C011	0256454	TANTALUM ELECTROLYTIC 4.7UF 4V
C012	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C013-014	0256452	TANTALUM ELECTROLYTIC 1UF 6.3V
C015	0256454	TANTALUM ELECTROLYTIC 4.7UF 4V
C017	0201054	CERAMIC CHIP 1000PF+-10% 50V
C018	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C019-021	0201006	CERAMIC CHIP 0.01UF+80-20%
C022	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C023	0201006	CERAMIC CHIP 0.01UF+80-20%
C024	0256454	TANTALUM ELECTROLYTIC 4.7UF 4V
C025	0201006	CERAMIC CHIP 0.01UF+80-20%
C026	0201030	CERAMIC CHIP 82PF+-5% 50V
C027	0201027	CERAMIC CHIP 47PF+-5% 50V
C028	0201030	CERAMIC CHIP 82PF+-5% 50V
C029	0201027	CERAMIC CHIP 47PF+-5% 50V
C030	0201054	CERAMIC CHIP 1000PF+-10% 50V
C031	0201020	CERAMIC CHIP 10PF+-0.5PF 50V
C032	0201006	CERAMIC CHIP 0.01UF+80-20%
C033-036	0201024	CERAMIC CHIP 27PF+-5%
C037	0201016	CERAMIC CHIP 6PF+-0.5PF
C101	0256692	ELECTROLYTIC 22UF 16V
C102	0256690	ELECTROLYTIC 10UF 16V
C103	0201024	CERAMIC CHIP 27PF+-5%
C104	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C105-108	0201026	CERAMIC CHIP 39PF+-5% 50V
C109	0256692	ELECTROLYTIC 22UF 16V
C111	0256692	ELECTROLYTIC 22UF 16V
C112	0256690	ELECTROLYTIC 10UF 16V
C113	0201026	CERAMIC CHIP 39PF+-5% 50V
C114	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C115-118	0201026	CERAMIC CHIP 39PF+-5% 50V
C119-120	0256692	ELECTROLYTIC 22UF 16V
C121	0256690	ELECTROLYTIC 10UF 16V
C122	0201026	CERAMIC CHIP 39PF+-5% 50V
C123	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C124-127	0201026	CERAMIC CHIP 39PF+-5% 50V
C128-130	0256692	ELECTROLYTIC 22UF 16V
C131	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C132	0256782	ELECTROLYTIC 220UF 10V
C134	0256692	ELECTROLYTIC 22UF 16V
C135-137	0256690	ELECTROLYTIC 10UF 16V
C138	0256681	ELECTROLYTIC 0.1UF, 50V
C139-140	0256690	ELECTROLYTIC 10UF 16V
C141	0201027	CERAMIC CHIP 47PF+-5% 50V
C142	0201031	CERAMIC CHIP 100PF+-5%
C145	0256181	ELECTROLYTIC 4.7UF, 16V
C146	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C147	0256782	ELECTROLYTIC 220UF 10V
C148	0201016	CERAMIC CHIP 6PF+-0.5PF
C149	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C150	0256685	ELECTROLYTIC 1UF, 50V
C156	0256692	ELECTROLYTIC 22UF 16V
C157	0256690	ELECTROLYTIC 10UF 16V
C159	0201001	CERAMIC CHIP 22PF+-5% 50V
C160-161	0201030	CERAMIC CHIP 82PF+-5% 50V
C162-163	0201026	CERAMIC CHIP 39PF+-5% 50V
C164	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C165	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C169	0201017	CERAMIC CHIP 7PF+-0.5PF
C170	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C171	0248670	CERAMIC DISC 27PF+-5% 50V
C175	0256685	ELECTROLYTIC 1UF, 50V
C176	0256690	ELECTROLYTIC 10UF 16V
C301	0201045	CERAMIC CHIP 150PF+-10%
C302	0201053	CERAMIC CHIP 820PF+-10%
C303	0201068	CERAMIC CHIP 0.033UF+80-20% 25V
C304	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C305-307	0256690	ELECTROLYTIC 10UF 16V
C308	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C309	0256692	ELECTROLYTIC 22UF 16V
C310	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C311	0256690	ELECTROLYTIC 10UF 16V
C312	0256692	ELECTROLYTIC 22UF 16V
C313	0256158	ELECTROLYTIC 47UF 16V
C315	0201061	CERAMIC CHIP 4700PF +–10% 50V
C316	0256196	ELECTROLYTIC 100UF, 16V
C317	0256762	ELECTROLYTIC 220UF 16V
C318	0201072	CERAMIC CHIP 0.047UF+80-20%
C319	0201027	CERAMIC CHIP 47PF+-5% 50V
C320-321	0256762	ELECTROLYTIC 220UF 16V
C322	0201054	CERAMIC CHIP 1000PF+-10% 50V

SYMBOL-NO	P-NO	DESCRIPTION
		CAPACITORS
C323	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C324	0256154	ELECTROLYTIC 4.7UF 25V
C325	0201061	CERAMIC CHIP 4700PF+-10% 50V
C326	0256762	ELECTROLYTIC 220UF 16V
C327	0201061	CERAMIC CHIP 4700PF +-10% 50V
C328	0256686	ELECTROLYTIC 2.2UF 35V
C329	0256690	ELECTROLYTIC 10UF 16V
C330	0256762	ELECTROLYTIC 220UF 16V
C331	0201061	CERAMIC CHIP 4700PF +-10% 50V
C333-334	0256135	ELECTROLYTIC 10UF 16V
C335-337	0256688	ELECTROLYTIC 4.7UF 16V
C338	0256196	ELECTROLYTIC 100MF,16V
C339	0256170	ELECTROLYTIC 100UF 10V
C340	0256158	ELECTROLYTIC 47UF 16V
C502	0256690	ELECTROLYTIC 10UF 16V
C503	0256688	ELECTROLYTIC 4.7UF 16V
C504-505	0256692	ELECTROLYTIC 22UF 16V
C506-507	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C508	0201054	CERAMIC CHIP 1000PF+-10% 50V
C509	0256686	ELECTROLYTIC 2.2UF 35V
C510	0256692	ELECTROLYTIC 22UF 16V
C511-512	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C513	0256690	ELECTROLYTIC 10UF 16V
C514	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C515	0256684	ELECTROLYTIC 0.47UF, 50V
C516	0256688	ELECTROLYTIC 4.7UF 16V
C701	0256158	ELECTROLYTIC 47UF 16V
C702	0249761	CERAMIC DISC 0.01UF+-20%
C801	0256692	ELECTROLYTIC 22UF 16V
C802	0256407	TANTALUM 47UF 10V
C803	0256158	ELECTROLYTIC 47UF 16V
C804	0201040	CERAMIC CHIP 560PF+-5%
C805	0201072	CERAMIC CHIP 0.047UF+80-20%
C806	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C807	0274014	MYLAR 3300PF+-10%
C808	0256685	ELECTROLYTIC 1UF, 50V
C809	0201061	CERAMIC CHIP 4700PF +-10% 50V
C810	0256690	ELECTROLYTIC 10UF 16V
C811	0256691	ELECTROLYTIC 10UF 25V
C812	0201061	CERAMIC CHIP 4700PF +-10% 50V
C813-814	0201062	CERAMIC CHIP 6800PF +-10% 50V
C815	0256685	ELECTROLYTIC 1UF, 50V
C816	0256402	TANTALUM ELECTROLYTIC 22UF 10V
C817	0256472	TANTALUM 2.2UF 20V
C818	0256690	ELECTROLYTIC 10UF 16V

SYMBOL-NO	P-NO	DESCRIPTION
C819	0256692	ELECTROLYTIC 22UF 16V
C820	0256685	ELECTROLYTIC 1UF, 50V
C821	0256782	ELECTROLYTIC 220UF 10V
C822	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C823	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C824	0201988	CERAMIC CHIP 0.1UF+-20%
C825	0249750	CERAMIC DISC 1000PF+-10% 1000V
C826	0268108	MYLAR 0.01UF+-10% 400V
C827	0256690	ELECTROLYTIC 10UF 16V
C828	0201030	CERAMIC CHIP 82PF+-5% 50V
C829	0256690	ELECTROLYTIC 10UF 16V
C830	0201038	CERAMIC CHIP 390PF+-5%
C831	0256752	ELECTROLYTIC 3.3UF 63V
C832	0201988	CERAMIC CHIP 0.1UF+-20%
C833	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C834	0201040	CERAMIC CHIP 560PF+-5%
C836	0201030	CERAMIC CHIP 82PF+-5% 50V
C837	0256789	ELECTROLYTIC 470UF 10V
		RESISTORS
RT002-003	5007462	SEMI VARIABLE 10KOHM
RT004	5007461	SEMI VARIABLE 4.7K OHM
RT101-104	5007444	SEMI VARIABLE 1KOHM
RT105-107	5007451	SEMI VARIABLE 100KOHM
RT108	5007445	SEMI VARIABLE 2.2KOHM
RT109	5007446	SEMI VARIABLE RESISTOR 4.7K OHM
RT110	5007447	SEMI VARIABLE 10KOHM
RT111-114	5007451	SEMI VARIABLE 100KOHM
RT301	5007461	SEMI VARIABLE 4.7K OHM
RT303	5007447	SEMI VARIABLE 10KOHM
RT304	5007448	SEMI VARIABLE RESISTOR 22KOHM
RT601	5005582	VARIABLE 10KOHM
RT602	5005585	VARIABLE 5KOHM
RT801	5007461	SEMI VARIABLE 4700 OHM
RT802	5007465	SEMI VARIABLE 100KOHM
RT803	5007468	VARIABLE 1MOHM
RT804	5007463	SEMI VARIABLE 22KOHM
RT805	5007468	VARIABLE 1MOHM
R001	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R002	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R003	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R004	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R005	0103831	CHIP RESISTOR 100OHM+-5% 0.1W
R006	0103841	CHIP RESISTOR 680OHM+-5% 0.1W
R007	0103835	CHIP RESISTOR 220OHM+-5% 0.1W
R008	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
		RESISTORS
R009-014	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R015	0103831	CHIP RESISTOR 100OHM+-5% 0.1W
R018	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R019	0103835	CHIP RESISTOR 220OHM+-5% 0.1W
R020	0103841	CHIP RESISTOR 680OHM+-5% 0.1W
R021	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R024-025	0103831	CHIP RESISTOR 100OHM+-5% 0.1W
R026	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R027	0103831	CHIP RESISTOR 100OHM+-5% 0.1W
R028	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R029	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R030	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R031	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R032-033	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R034	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R035	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R036	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R037	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R038	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R039	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R043-050	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R055	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R056	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R057	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R058	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R059-060	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R062	0171106	CARBON FILM 12KOHM+-5% 1/8W
R063	0171085	CARBON FILM 220OHM+-5% 1/8W
R101	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R102-103	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R105	0103841	CHIP RESISTOR 680OHM+-5% 0.1W
R106	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R107	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R108-110	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R111	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R112	0103837	CHIP RESISTOR 330OHM+-5% 0.1W
R113-114	0103841	CHIP RESISTOR 680OHM+-5% 0.1W
R115	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R116	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R117-119	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R120	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R121	0103841	CHIP RESISTOR 680OHM+-5% 0.1W
R122	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R123	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R124-126	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R127	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R128-129	0103831	CHIP RESISTOR 100OHM+-5% 0.1W
R130	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R131	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R132	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R134	0103827	CHIP RESISTOR 47OHM+-5% 0.1W
R135	0103831	CHIP RESISTOR 100OHM+-5% 0.1W
R136-137	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R140	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R141	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R142	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R147-148	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R149-150	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R152	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R153	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R154-157	0103828	CHIP RESISTOR 56OHM+-5% 0.1W
R158	0103835	CHIP RESISTOR 220OHM+-5% 0.1W
R159	0103832	CHIP RESISTOR 120OHM+-5% 0.1W
R160-163	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R166	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R167	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R168	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R169	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R170	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R172	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R173	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R174	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R175	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R176	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R178-179	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R180	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R181	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R182	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R183	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R184	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R188-191	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R192	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R196	0103819	CHIP RESISTOR 10OHM+-5% 0.1W
R301-302	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R303	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R304	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R305	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R306	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R307	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R308	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R309	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R310	0103831	CHIP RESISTOR 100OHM+-5% 0.1W
R311	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
		RESISTORS
R312	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R313	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R314-315	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R316	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R317	0103831	CHIP RESISTOR 100OHM+-5% 0.1W
R318	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R319	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R320	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R321	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R322	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R323	0170351	CARBON FILM 820OHM+-5% 1/8W
R324	0170350	CARBON FILM 680OHM+-5% 1/8W
R325	0170353	CARBON FILM 1.2KOHM+-5% 1/8W
R326	0170354	CARBON FILM 1.5KOHM+-5% 1/8W
R327	0170365	CARBON FILM 12KOHM+-5% 1/8W
R329	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R330	0170351	CARBON FILM 820OHM+-5% 1/8W
R331-332	0170373	CARBON FILM 56KOHM+-5% 1/8W
R333	0170350	CARBON FILM 680OHM+-5% 1/8W
R334	0170364	CARBON FILM 10KOHM+-5% 1/8W
R335	0170372	CARBON FILM 47KOHM+-5% 1/8W
R336-337	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R338	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R339	0103832	CHIP RESISTOR 120OHM+-5% 0.1W
R340-341	0170388	CARBON FILM 1MOHM+-5% 1/8W
R350	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R352	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R353	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R354	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R355	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R356-358	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R359	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R360-	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R361	0103866	CHIP RESISTOR 82KOHM+–5% 0.1W
R362	0103865	CHIP RESISTOR 68KOHM+–5% 0.1W
R363	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R364	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R365	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R366	0103868	CHIP RESISTOR 120KOHM+-5% 0.1W
R367	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R368	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R369	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R371	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R372	0103840	CHIP RESISTOR 560OHM+-5% 0.1W
R374-375	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R376	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R377	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R378	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R501	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R508	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R509	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R510	0103836	CHIP RESISTOR 270OHM+-5% 0.1W
R511	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R512	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R513	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R514	0103848	CHIP RESISTOR 2.7KOHM+–5% 0.1W
R515	0103841	CHIP RESISTOR 680OHM+-5% 0.1W
R601	0171258	METAL FILM 660OHM+-1% 1/4W
R602	0170366	CARBON FILM 15KOHM+-5% 1/8W
R603	0170351	CARBON FILM 820OHM+-5% 1/8W
R604	0170358	CARBON FILM 3.3KOHM+-5% 1/8W
R801	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R802	0103860	CHIP RESISTOR 27KOHM+-5% 0.1W
R803	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R804	0103873	CHIP RESISTOR 330KOHM+–5% 0.1W
R805	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R806	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R807	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R808	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R809	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R810	0103875	CHIP RESISTOR 470KOHM+-5% 0.1W
R811	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R812	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R813	0103840	CHIP RESISTOR 560OHM+-5% 0.1W
R814	0103823	CHIP RESISTOR 22OHM+-5% 0.1W
R815	0103881	CHIP RESISTOR 2.2MOHM+-5% 0.1W
R816	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R817	0103881	CHIP RESISTOR 2.2MOHM+-5% 0.1W
R818	0103841	CHIP RESISTOR 680OHM+-5% 0.1W
R819	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R820	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R821	0103877	CHIP RESISTOR 680KOHM+-5% 0.1W
R822	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R823	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R824	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R825	0103837	CHIP RESISTOR 330OHM+-5% 0.1W
R826	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R827	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R828-830	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R831	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R832	0103833	CHIP RESISTOR 150OHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
		RESISTORS
R833	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R834	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R835	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
		SEMI-CONDUCTORS
D001	5331031	DIODE 1SV68
D101	5331031	DIODE 1SV68
D102	5328321	DIODE MA151K (MH)
D301	5381171	DIODE PD151
D302-303	5331941	DIODE 1S002
D304-305	5328321	DIODE MA151K (MH)
D307-308	5332401	DIODE MA165
D309	5330134	DIODE 1S2076
D310	5328303	DIODE MA152WK (MU)
D311	5328321	DIODE MA151K (MH)
D312	5328303	DIODE MA152WK (MU)
D313	5328381	DIODE MA153 (MC)
D314	5330328	DIODE HZ9C3
D316	5328321	DIODE MA151K (MH)
D601	5330131	DIODE 1S2076
D701	5330101	RECTIFIER SILICON V06C
D801	5328321	DIODE MA151K (MH)
D804-805	5331001	DIODE 1SS81
D806	5331011	DIODE HZ33
ZD001	5330316	DIODE HZ7C-1L
ZD501	5331264	ZENER DIODE HZ7B-3L
LD828-829	5380881	LED SLP-114B
LD830	5380882	LED SLP214B
IC002	5376241	IC HT5201
IC003	5376251	IC HT5202
IC004	5376241	IC HT5201
IC005	5361211	IC HD44053
IC101	5369972	IC BA7122L
IC102-103	5369971	IC BA7122L
IC104	5377083	IC HT5161B
IC105	5377092	IC HT5162A
IC106	5377101	IC HT5163
IC107	5374191	IC HT5406
IC108	5374181	IC HT5405
IC109	5354781	IC NR203
IC110	5376931	IC HT5126
IC301	5369571	IC NJM082
IC302	5377002	IC HT5124A
IC303	5375482	IC HT5108A
IC304	5376381	IC HT5140
IC305	5375463	IC HT5106B
IC306	5376921	IC HT5125
IC307	5363931	IC NJM2048
IC308	5369561	IC NJM4558G
IC309	5363931	IC NJM2048
IC501	5376292	IC HT5134A
IC502	5377181	IC HT5165
IC503	5361492	IC MSM6219RS
IC504	5365722	IC HD44040RA
IC505	5377191	IC HT5166
IC801	5375593	IC HT5111B
IC802	5351302	IC HA1166X
IC803	5377212	IC HT5167A
IC804	5377221	IC HT5168
Q001	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q002	5328251	MICRO PACKAGE TRANSISTOR 2SA1122-CD
Q003	5328201	MICRO PACKAGE TRANSISTOR 2SC2618 (RC)
Q004	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q005	5328251	MICRO PACKAGE TRANSISTOR 2SA1122-CD
Q006-007	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q010	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q101-102	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q104-105	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q106-108	5328251	MICRO PACKAGE TRANSISTOR 2SA1122-CD
Q301	5328251	MICRO PACKAGE TRANSISTOR 2SA1122-CD
Q302	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q303-304	5320723	TRANSISTOR 2SA715WT-C
Q306-308	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q309	5328251	MICRO PACKAGE TRANSISTOR 2SA1122-CD
Q310-314	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q501	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q801	5328192	MICRO PACKAGE TRANSISTOR 2SC2462-LD
Q802	5329241	MICRO PACKAGE TRANSISTOR 2SC2463DE
Q803	5323831	TRANSISTOR 2SD974
		TRANSFORMERS
T801	5271272	FLYBACK TRANSFORMER
		COILS
L001	5152607	CHOKE COIL 100MICRO H
L101	5152607	CHOKE COIL 100MICRO H
L103	5152612	CHOKE COIL 220MICRO H
L302	5152811	CHOKE COIL 68MICRO H
L303-304	5152812	CHOKE COIL 470MICRO H
L305-306	5152811	CHOKE COIL 68MICRO H
L501-502	5152612	CHOKE COIL 220MICRO H
L801	5152612	CHOKE COIL 220MICRO H
L802	5152599	CHOKE COIL 27MICRO H

SYMBOL-NO	P-NO	DESCRIPTION
COIL		
L803	5270574	COIL
L805	5152603	CHOKE COIL 47MF
CRYSTALS		
X101	5780821	CRYSTAL 17.7MHZ
X102	5780832	CRYSTAL 4.43 MHZ
MISCELLANEOUS		
	6869311	COVER
CP101	5162204	TRAP
CS801	5659584	SOCKET
DL101	5162545	DELAY LINE
DL102	5162546	DELAY LINE
DL103	5162641	DELAY LINE
DL104	5162544	DELAY LINE
FL701	5882015	CABLE
F701	5720173	FUSE 500MA
J901	5673541	JACK
SW601	5622661	SWITCH
SW602	5622421	SWITCH
SW603	5633911	SWITCH
SW701	5622651	SWITCH

SYMBOL-NO	P-NO	DESCRIPTION
		FOR FINAL ASSEMBLY
1	6023732	SIDE CASE-L
3	7685229	SPACER
4	6877035	KNOB
5	6075215	KNOB
6	6075224	KNOB
7	7685361	SHEET
8	6022429	SIDE CASE-R
9	6335082	STRAP
10	6877111	HOLDER
11	7783441	SCREW
12	7385031	STRAP HOLDER
13	7385041	STRAP HOLDER
14	7489192	SHIELD PLATE
15	6877202	HOLDER
16	6877042	HOLDER
17	6877022	RING
18	6959791	FILTER
19	6950421	FILTER
20	5639932	SWITCH
21	5639944	SWITCH
22	7385282	SWITCH HOLDER
23	7385292	SWITCH HOLDER
24	7746782	SPACER
25	5883112	CAMERA CONNECTOR
26	5422023	MICROPHONE
28	6023082	COVER-R
29	6021646	TOP COVER
30	7489214	SHIELD
31	7489224	SHIELD
32	6955264	LENS ASSEMBLY
33	6879951	HOOD
34	6879941	HOOD CAP
35	6979291	FRAME
36	6978835	FRAME
37	6979032	FRAME
38	6022675	UPPER CASE
39	6955362	EVF LENS
40	6537172	SPRING
41	6022116	BOTTOM CASE
42	5311041	PICTURE TUBE
43	5272092	DEFELECTION YOKE
44	7683613	SPACER
45	6075711	KNOB
46	7673142	CUSHION
47	7685221	SPACER
50	7386561	FILTER HOLDER
51	6591432	RUBBER
52	6591642	RUBBER
53	6520321	SPRING
54	7782142	SCREW
55	8812231	WASHER - 2MMD
56	7684622	SHIELD CASE
57	0741305	SCREW(2.6X5B)
58	7386671	FRAME HOLDER
59	5781141	FILTER
65	7685411	WASHER
66	7687381	SPACER
67	5883081	SOCKET
68	6022631	COVER
101	8691306	SCREW (BT2.6X6)
102	0724308	SCREW (2.6X8)
103	8699322	SCREW (2.6X22)
104	8699320	SCREW (2.6X20)
105	8691305	SCREW (2.6X5)
106	0724305	FALT SCREW-2.6MMDX5MM
107	0725305	SCREW (2.6X5)
110	8741408	SCREW (B3X8)
111	8721408	FLAT SCREW - 3MMD X 8MM
112	8699305	SCREW (2.6X5)
113	8699308	BT BIND SCREW-2.6MMDX8MM(BLACK)
		FOR ACCESSARIES
	5883102	CAMERA CABLE
	7063934	OPERATING GUIDE